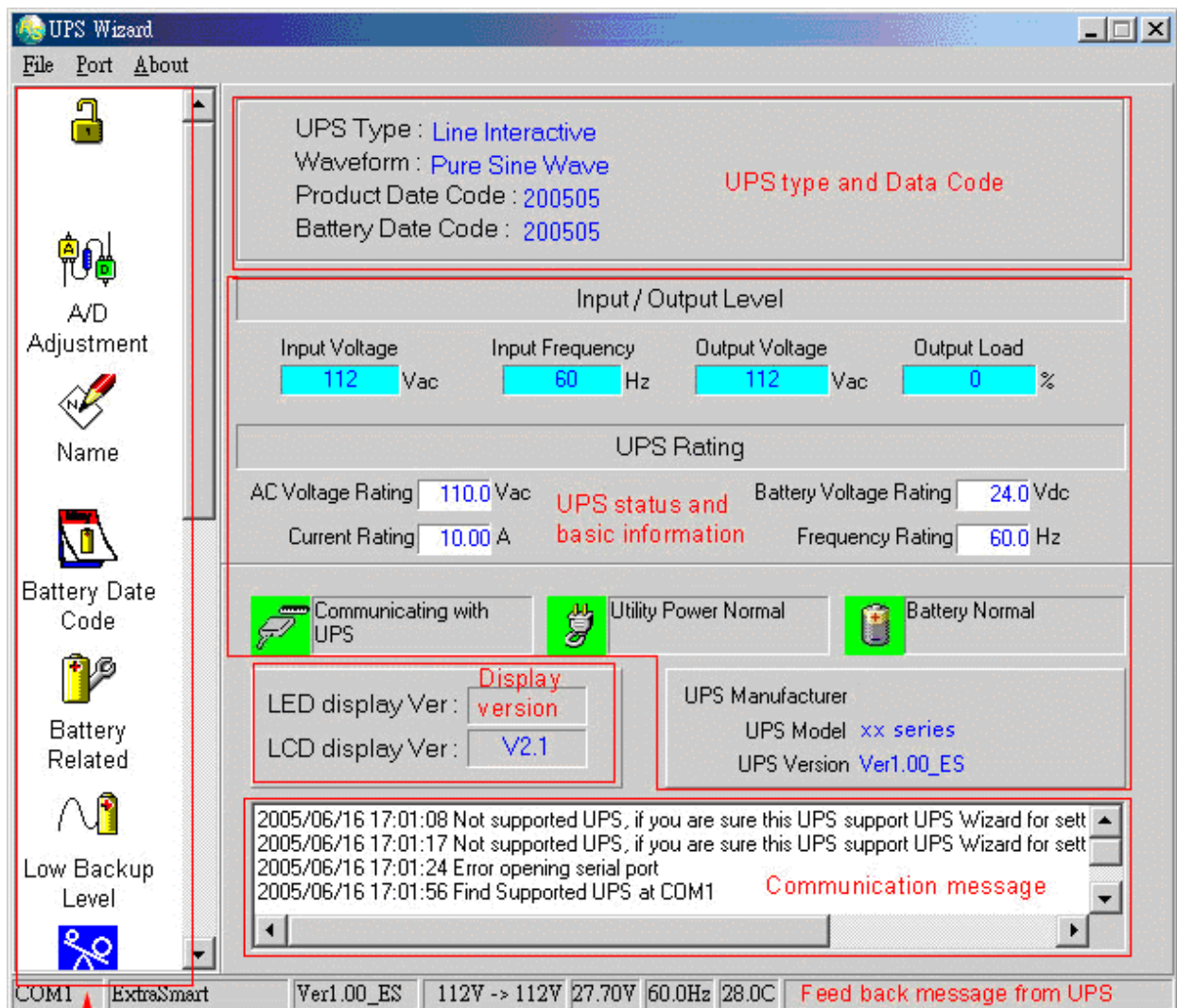


UPS Wizard User's Manual

1. The communication cable M2502: This is a special designed cable for the communication of UPS with your PC; only connecting with the correct cable, the PC can detect the UPS.



2. The main window of the UPS Wizard is shown below.

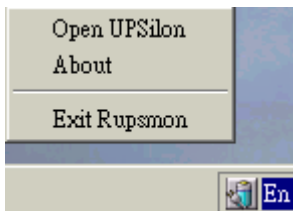


Function icons for setting UPS

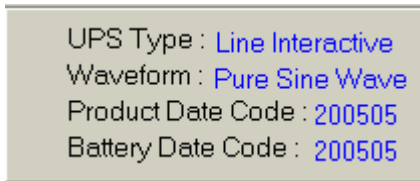
3. Select the com port for UPS or select "Auto Detect" if you do not know which com port is connecting to the UPS.



4. When the com port is occupied by a monitoring software, for example, the UPSilon, the auto-detecting will fail. Please exit UPSilon first before executing UPS Wizard.



5. When the communication is O.K., it shows the following information.

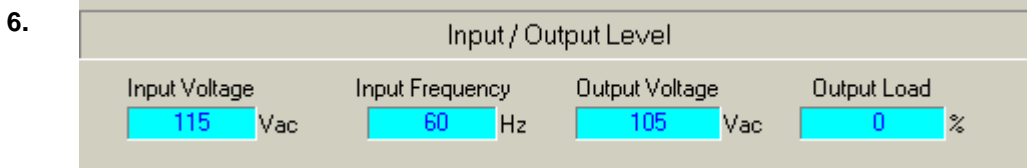


UPS Type: On-Line, Line Interactive or OFF-Line.

Waveform: Pure Sine Wave or Step Wave.

Product Date Code: UPS manufacturing date.

Battery Date Code: Battery replacement or installation date.



Input Voltage: 115Vac

Input Frequency: 60Hz

Output Voltage: 105Vac

Output Load: 0%

7.

UPS Rating			
AC Voltage Rating	<input type="text" value="110.0"/>	Vac	Battery Voltage Rating
Current Rating	<input type="text" value="10.00"/>	A	Frequency Rating
			<input type="text" value="60.0"/>
			Hz







AC Voltage Rating: 100/110/115/120Vac or 200/220/230/240Vac.

Battery Voltage Rating: 12/24/36/48/60/72...

Current Rating: UPS maximum O/P current rating.

Frequency Rating: 50/60Hz

8.

	Communicating with UPS	The fig shows communication is good.
	Lost the Communication with UPS	The fig shows the communication is lost.
	Utility Power Normal	The fig shows AC input is normal.
	Utility Power Fail	The fig shows AC input has failed.
	Battery Normal	The fig shows battery voltage is normal.
	Battery Low	The fig shows battery voltage is too low.

9.

LED display Ver :	<input type="text" value="V1.0"/>
LCD display Ver :	<input type="text"/>

The fig shows the display type is installed and the version of it.

UPS Manufacturer
UPS Model xx series
UPS Version V5.15CA505

The fig shows the manufacturer of the UPS, model and version.

10.

2005/06/13 15:42:35 Find Supported UPS at COM1	▲
2005/06/13 15:43:42 Not supported UPS, if you are sure this UPS support UPS Wizard for sett	■
2005/06/13 15:52:47 Error opening serial port	■
2005/06/13 15:53:12 Can not find UPS	▼

The fig shows the communication message.

11.

COM1	xx series	V5.15CA505	115V -> 105V	25.10V	60.0Hz	29.0C	
------	-----------	------------	--------------	--------	--------	-------	--

The fig shows the feed back data from UPS.

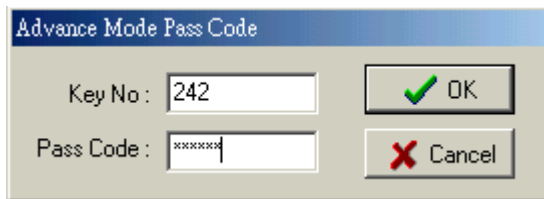
12. Function icons for setting UPS.

12.1

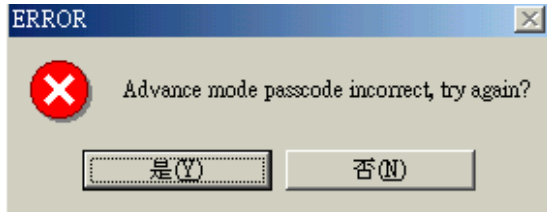


Unlock

Select the icon to input unlock code. The advanced functions are designed for service engineer, you must input the unlock code to enable the advanced functions.



Please follow the key No (each for individual agent) to input correct pass code.



The fig shows pass code incorrect.



After input correct pass code. The unlock fig will show. All the advanced functions (gray color icons) will be activated.

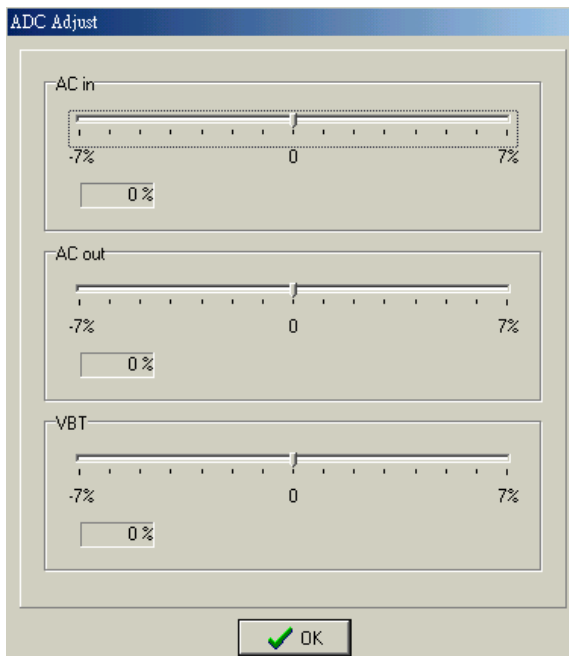
12.2



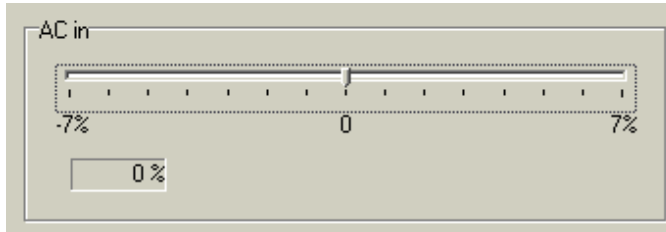
A/D Adjustment

Analog to Digital converter (ADC) adjustment.

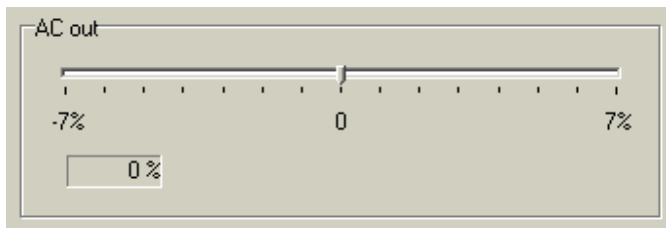
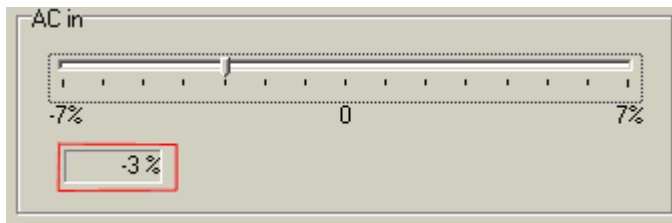
The function is used to adjust the ADC ratio for AC input voltage, AC output voltage, and battery voltage.



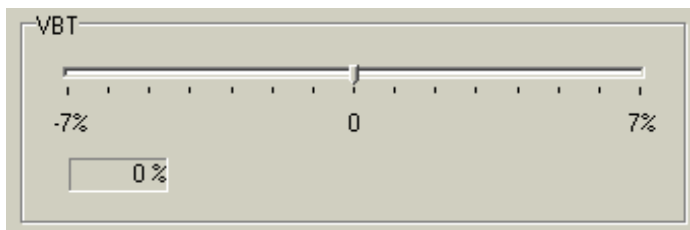
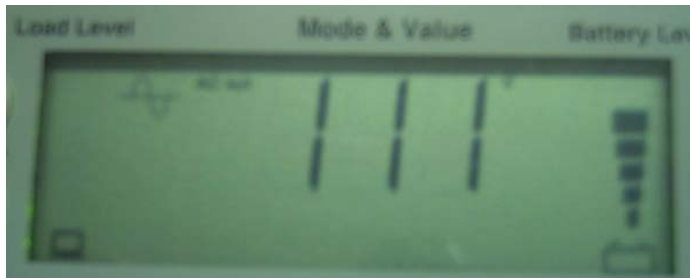
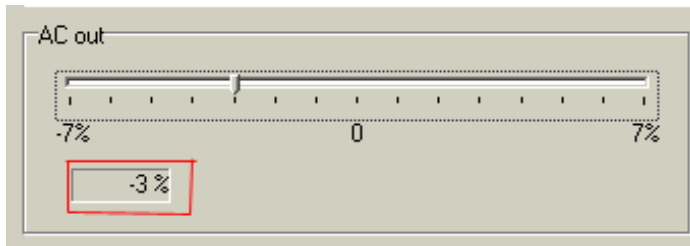
The ADC provides $\pm 7\%$ adjustment. The result will be stored inside the flash memory of UPS so that the set-up will not disappear when UPS is turned off.



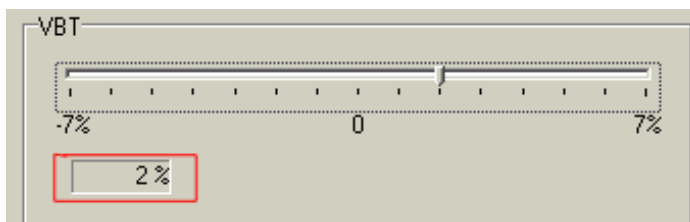
When AC **input** voltage is 111V, but UPS shows 115V, by reducing 3% of the sensed AC input level will correct the ADC of AC input. The result is shown below.



When AC **output** voltage is 111V, but UPS display 115V, by reducing 3% of the sensed AC output level will correct the ADC of AC output. The result is shown below.



When battery voltage is 23.4V, but UPS display 22.9V, by increasing 2% of the sensed battery voltage level will correct the ADC of battery voltage. The result is shown below.



12.3



Company name and model name set-up (support for advanced mode only)

Name

Input the Company name and model name then press O.K.

12.4



Battery Date code adjustment (support for advanced mode only)

Battery Date
Code

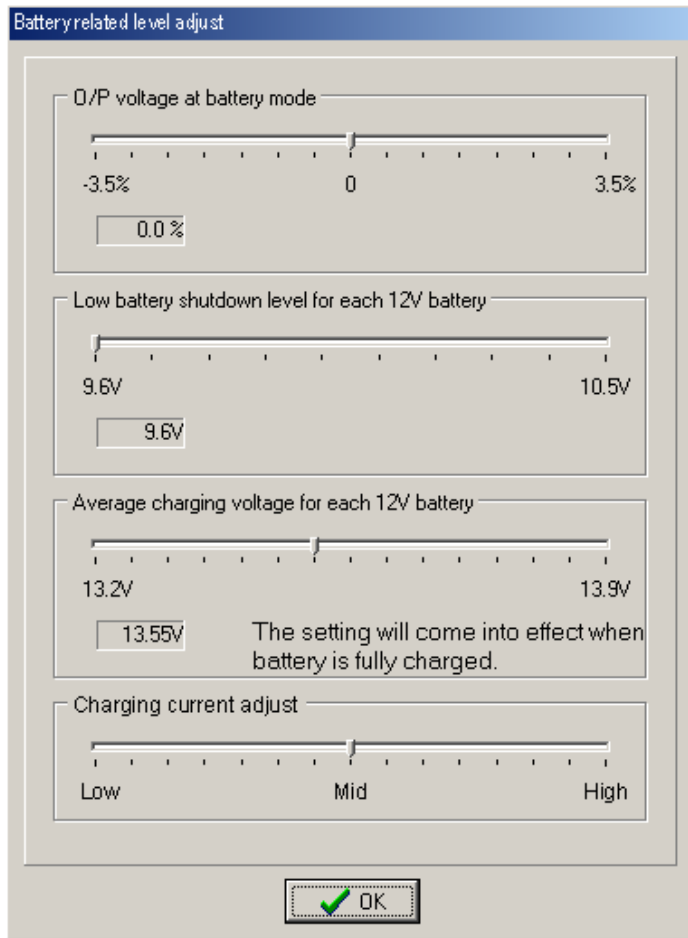
Input the new battery date code then press O.K.

12.5

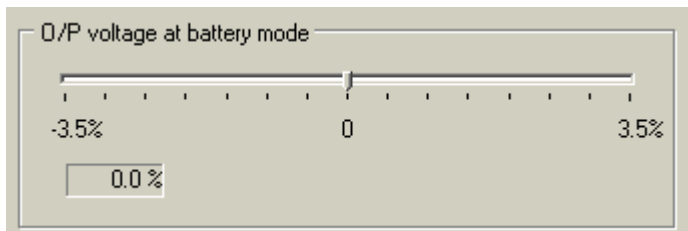


Battery related level set-up.

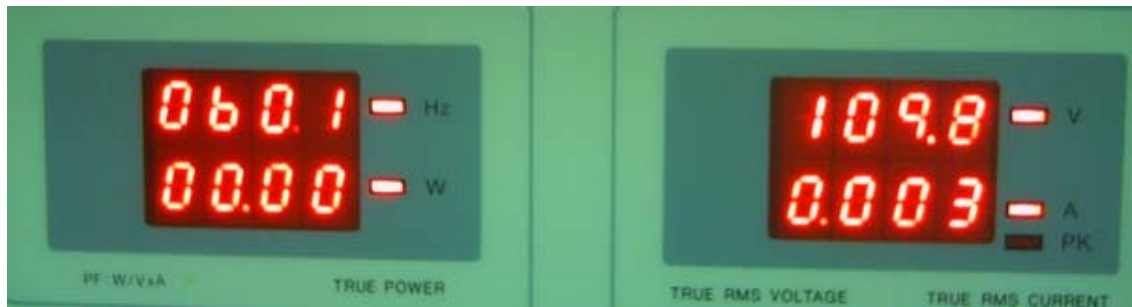
Battery
Related



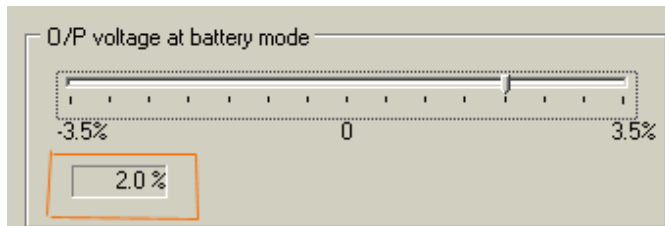
The battery related levels include the O/P voltage at battery mode, low battery shutdown level, and averaged floating charge voltage.



The actual O/P voltage at battery model is the same as rated value, 100/110/115/120 or 200/220/230/240Vac.



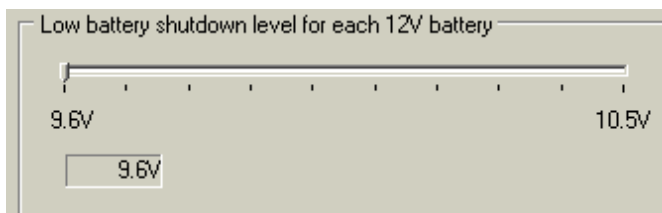
Before adjustment



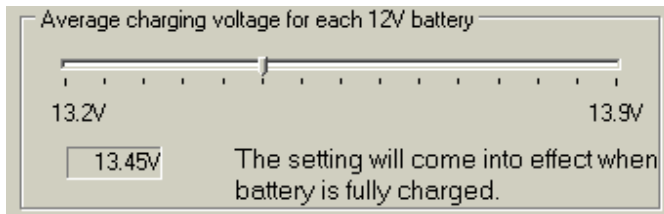
Using the bar to adjust actual O/P voltage for $\pm 3.5\%$.



After adjustment



The standard low battery shutdown level is 9.6V, it is allowed to adjust between 9.6V ~ 10.5V when connecting the UPS with big external battery for long backup application.



When battery is not fully charged, the average charging voltage is 14V for each battery, to make sure the battery being fully charged, the charging voltage 14V is not adjustable. When battery is fully charged, the floating charging voltage will be reduced for extending the battery lifetime. Normally, 13.5V for each battery is a suitable level.



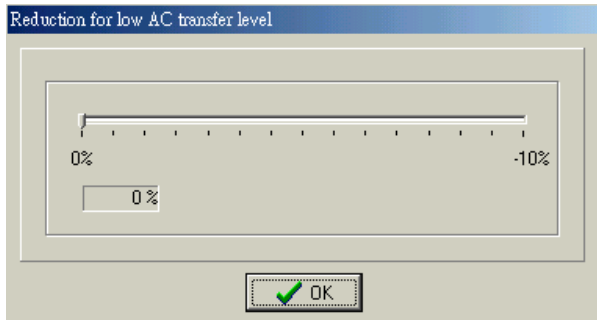
Charging current adjustment: The charging current is mainly related to the transformer design of each model, but we can adjust the PWM control to change the charging current. We suppose that the charging current at 'Mid' is 100%, to move the setting bar to 'High' will increase the charging current to 150% typically, and to move the setting bar to 'Low' will reduce the charging current to 50% typically. It's necessary to have a qualified engineer for the adjustment of charging current according to the battery type and size.

12.6



Low Backup Level

The reduction of low AC transfer level is a very useful function when the utility power is poor.



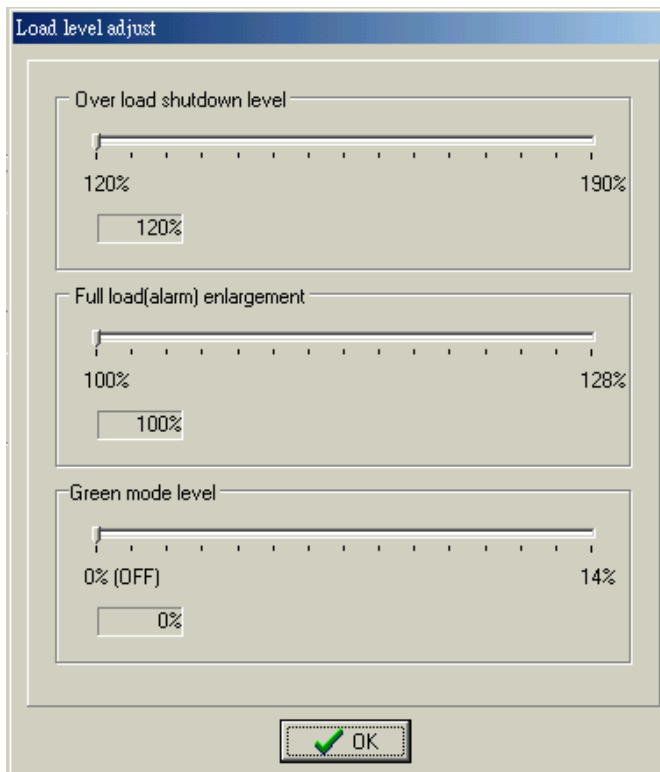
The lower the low AC transfer level, the lower the chance to discharge the battery energy. However, the lower transfer level will decrease the O/P voltage level when utility power is normal but voltage is very low. Only those equipments applicable with wide I/P voltage range are suitable for applying this adjustment.

12.7



Load Level Control

When UPS reaches the full load level, the UPS will emit overload alarm and shutdown at overload shutdown level. The higher the overload, the shorter the battery backup time.



The Green mode function is to have UPS shut off automatically when load level is under the preset level in battery mode. When a blackout happens, some equipment provides auto-shutdown function, but some of them may not provide signal to shut down UPS because more than one equipment is connected to the UPS, and the timing is hard to control. To enable the green mode function will be a perfect solution to save the battery energy or provide shutdown/reset signal when utility power is back.

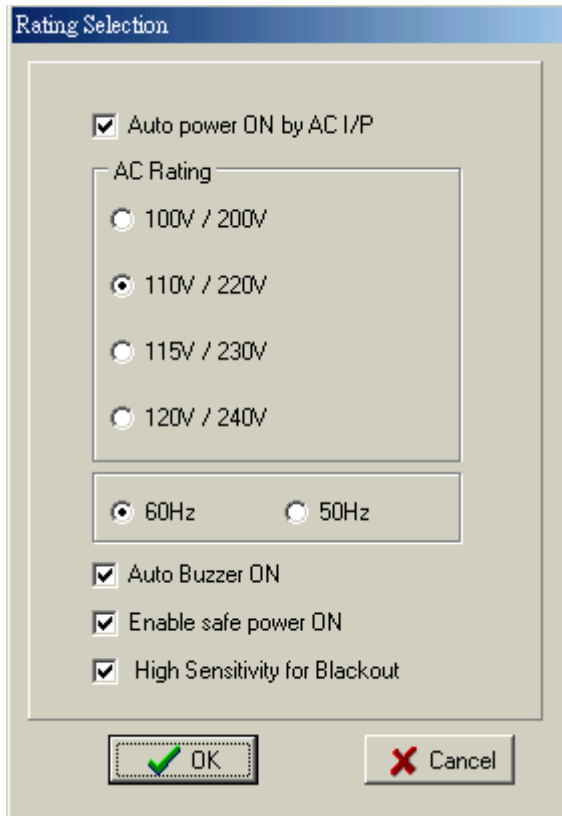
12.8



Setting

To enable the function of **Auto power ON**, the UPS will turn on automatically from OFF mode when connect utility power to the UPS; While if disable the function, UPS will stay in the OFF mode but keep charging.

When the AC rating is changed, the O/P voltage will be changed not only at the battery mode, but also at the AC mode.



When the frequency set-up is changed, the O/P frequency will not change at once, only after a complete shutdown, and to have a DC start on the UPS; then, the O/P frequency will apply the set frequency.

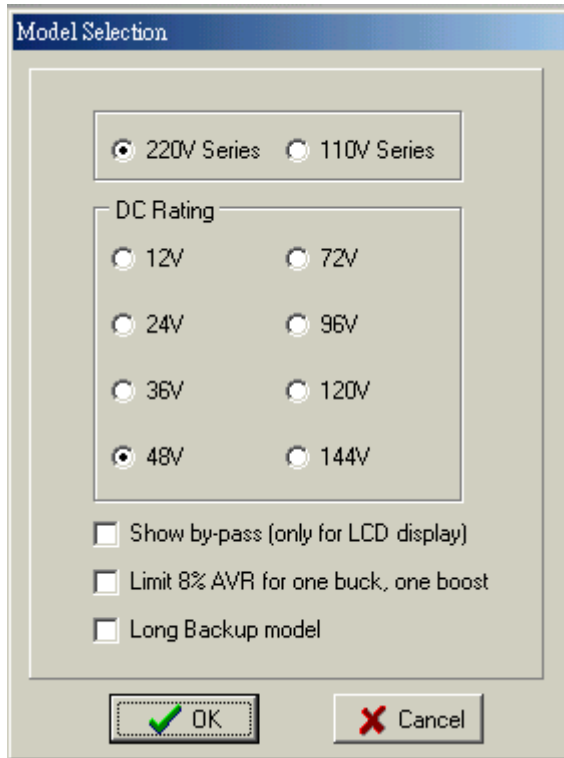
During the battery mode, by pushing the button for entering silence mode is a friendly design, but when a blackout happens next time, the UPS won't emit blackout beeping. To have the beeping whenever a blackout happens, please enable **Auto Buzzer ON**.

Safe power ON is a function that delays "Auto power ON" function. When this function is enabled, the Auto power ON will be triggered only after the battery is charged to 12.8V up for each 12V battery. Without this function, any short time recovery of utility power will trigger the UPS to turn ON, but if battery is empty, UPS cannot protect your equipment at all.

When the "**High sensitivity for Blackout**" is enabled, the UPS provides very fast response in detecting the line voltage distortions, such as spikes, notches, dips, swells, and the distortions caused by operation with generators as well. When power quality is poor, the UPS may frequently transfer to battery mode operation, if a load can operate normally under poor power condition as mentioned above, disable the High sensitivity may conserve the battery energy and capacity.

12.9

Model Set-up (support for advanced mode only)



The set-up of model will change the operation mode of UPS, the calculation of RS232 data, and LCD display mode. The engineer must change the set-up of model very carefully. If an engineer needs more detailed information of the model set-up, please contact us.

12.10



Backup Time Cal...

Backup time calculation

If you are not sure how much backup time you can get with a selected battery, this program will answer you.

Load level	3%	8%	12%	20%	32%	48%	65%	85%
Watt under load level								
Depth of discharging								
Backup time								

Battery
 Ah

The capacity of the UPS battery 7Ah, 12Ah, 25Ah, or 38Ah...

If you use two 7Ah batteries in parallel connection; please input 14Ah.

Battery
 V

The total battery voltage with series connection.

Efficiency of backup mode
 %

The transfer efficiency of UPS inverter from battery to the UPS output.

Generally, 85% is a typical value for UPS inverter.

Full load
 W

The full load level of a UPS, change of each scale is 25W.

Stand-by current
 A

Under no load condition, the basic current that a UPS requires to maintain the output voltage when the UPS is turned on at battery mode.

The high-density type provides higher depth of discharging as compared with a normal type; so, it provides longer backup time when load is at high level.

Battery Type
 Normal
 High Density

For example:

The NP7-12 (YUASA) is a normal type battery, and REW45-12 (YUASA) is a high density one. Both are the same capacity 7Ah-12V, but different backup time when using in UPS at high load level.

Auto Calculate

Select 'Auto Calculate' to calculate the backup time when the parameters are changed.

Energy capacity = W for

It shows the backup time when battery energy is 100% discharged at full load level.

Full load current = A

The full load current is the battery current when UPS is full loaded. It helps engineer to decide what size of DC cable should be used.

Fill in the information of the UPS; then press "calculate" to calculate the backup time.

For example:

A 2KVA model, 1200W UPS, uses 4 pcs of NP7-12 (YUASA) battery. The UPS inverter efficiency is 85%, and it takes 0.8A from battery when no load is connected. The following fig shows the calculation result.

Backup Time Calculation

Battery Ah Battery V Efficiency of backup mode % Full load W

Stand-by current A Battery Type Normal High Density Auto Calculate

Energy capacity = W for

Full load current = A

Load level	3%	8%	12%	20%	32%	48%	65%	85%
Watt under load level	36.0	96.0	144.0	240.0	384.0	576.0	780.0	1020.0
Depth of discharging	87.1	78.7	70.2	62.9	55.4	48.6	42.9	37.7
Backup time	3hr 38min	1hr 45min	1hr 8min	39.6min	22.8min	13.7min	9.1min	6.1min

12.11



New Battery (support for LCD version at advanced mode)

New Battery

This function is designed for data input and auto-calculation of the backup time after the UPS is replaced with a new battery set.

For example:

A 2.2KVA (1350W) UPS uses 4 REW45-12 (YUASA) batteries (high-density type) for battery replacement. The UPS inverter efficiency is 88%, and it takes 0.6A from battery when no load is connected, the charging current is 2.4A. Input the data for calculating the new set-up, and select 'Write New Setting to UPS Setting' to update the UPS backup time data.

New battery

Battery Ah Battery V Efficiency of backup mode % Full load W Charging current A

Stand-by current A Battery Type
 Normal High Density Energy capacity = W for

New Setting

Load level	3%	8%	12%	20%	32%	48%	65%	85%
Watt under load level	40.5	108.0	162.0	270.0	432.0	648.0	877.5	1147.5
Depth of discharging	87.6	80.1	72.7	66.5	60.1	54.4	49.7	45.5
Backup time	4hr 2min	1hr 48min	1hr 9min	40.2min	23.4min	14.4min	9.8min	6.9min

Write New Setting to UPS Setting

UPS Setting

Load level	3%	8%	12%	20%	32%	48%	65%	85%
Watt under load level	40.5	108.0	162.0	270.0	432.0	648.0	877.5	1147.5
Depth of discharging	85.9	77.6	68.6	61.6	53.7	47.1	41.2	36.1
Backup time	3hr 46min	1hr 45min	1hr 6min	37.1min	21.0min	12.4min	8.1min	5.5min

The LCD version of UPS provides the estimation of backup time (EBT) with accuracy. Every time when the UPS is running in the battery mode, the CPU of LCD display will adjust the backup time record if low battery alarm occurs. The record provides the EBT system to calculate the backup time when a blackout happens next time. Once the battery is replaced, the engineer will need to re-input the related data of the new battery for a new backup time to keep the EBT system in the best accuracy.

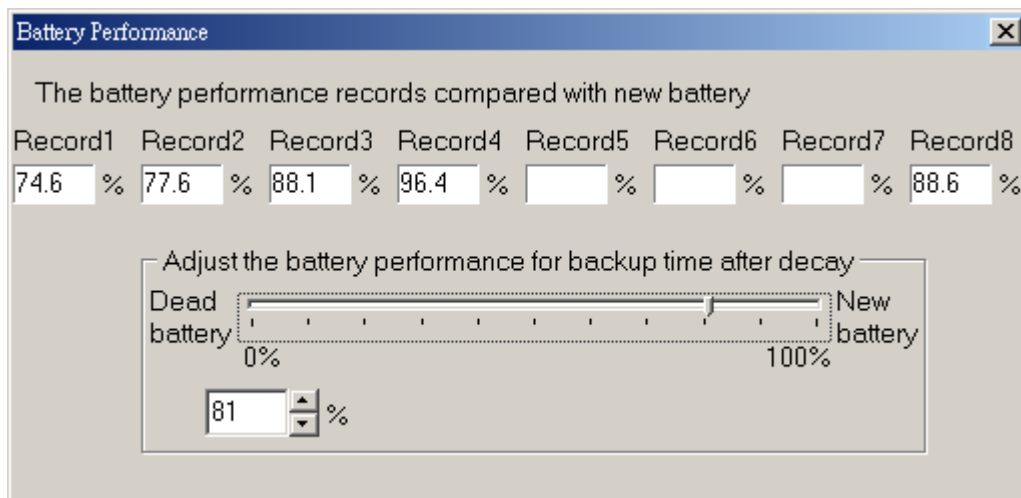
12.12



Battery Performance (support for LCD version at advanced mode)

Battery Performance

The function is designed to adjust the database of backup time. When the battery performance decays after years of using, the EBT system may not display the correct backup time. To check the accuracy of EBT system, please select **【Testing UPS to low battery】** from the monitoring software, for example, the UPSilon2000. When testing a UPS, the EBT will count down according to the load level. When UPS emits low battery alarm, check LCD, if it shows 1 or 2minutes for the backup time of the battery, it is very normal, basically, if total backup time is 20minutes, deviation for 1 or 2minutes is acceptable, it's suggested to make some adjustment if over 15%.



There are 8 kinds of battery performance records for the load level from 3% to 85%. Each time when the UPS is running in the battery mode and discharged to low battery alarm, the backup time will be recorded into the battery performance data for the reference of adjusting the battery performance. Generally, we select the lower 3 or 4 values in average for the new set-up of battery performance.

For example:

A UPS has 5 records of battery performance from 74% to 96%. We use the averaged value from 74% to 88% for calculation of decay. Input 81% for calculating the new backup time, and select 'Write New Setting to UPS Setting' to update the UPS backup time data.

Battery Performance

The battery performance records compared with new battery

Record1	Record2	Record3	Record4	Record5	Record6	Record7	Record8
74.6 %	77.6 %	88.1 %	96.4 %				88.6 %

Adjust the battery performance for backup time after decay

Dead battery New battery

0% 100%

81 %

Level after decay

Load level	3%	8%	12%	20%	32%	48%	65%	85%
Watt under load level	40.5	108.0	162.0	270.0	432.0	648.0	877.5	1147.5
Backup time	3hr 12min	1hr 23min	50.0min	27.3min	14.6min	8.1min	4.9min	3.0min

Write New Setting to UPS Setting

UPS Setting

Load level	3%	8%	12%	20%	32%	48%	65%	85%
Watt under load level	40.5	108.0	162.0	270.0	432.0	648.0	877.5	1147.5
Backup time	3hr 46min	1hr 45min	1hr 6min	37.1min	21.0min	12.4min	8.1min	5.2min

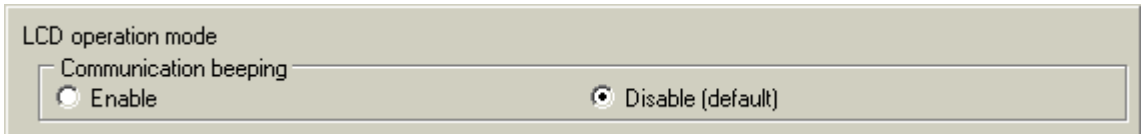
12.13



LCD Display (support for LCD version at advanced mode)

This function is designed for the set-up of LCD display and EBT system.

LCD Display Setting



This function is enabled only when the engineer needs to check the communication between the two CPUs (main & display). Please disable it for user. If enable the beeping, the LCD will emit a short-time beep whenever the LCD receives a command for reading the flash memory.



This function is designed to set up the display mode. When an LED-display UPS needs to install an external LCD display for remote control, the control bus is in parallel connection. To separate the control signal, the LCD display must be set in slave mode.



The UPS supports remote control for turn-on and turn-off schedule from the monitoring software, for example, the UPSilon2000. User can check the set-up from the LCD display when UPS receives a command from PC side. User can't set, nor change the set-up at all without a PC. To enable the function will provide a new way to change or set the time for turning on or off the UPS.



The LCD version of UPS will provide the estimation of backup time (EBT) with accuracy if the database is correct. Engineer can disable this function if the database is wrong or when users do not need this function. The following set-up will not run if EBT system is in off mode.



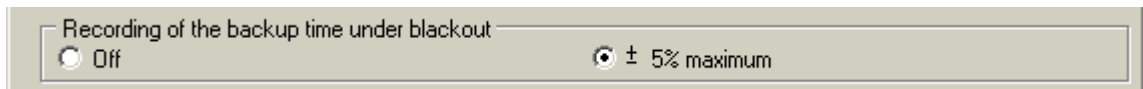
Normally, the EBT system is possible to show 1 or more minutes when UPS shutdown by battery low. To adjust the database from the bar of **【Adjust the battery performance for backup time after decay】** in 'battery performance', as shown in 12.12, may avoid this situation. Another simple way is to turn off EBT system at low battery alarm; thus will force the UPS to count down the backup time from 1.0 minute. However, the UPS may still have one more minute of backup time when the countdown is 0.0 minute.



When this function is on, EBT will correct the count down in reference of battery voltage.



EBT system will record and adjust the backup time data under backup mode or test mode when low battery alarm. The data is used for reference of EBT system under next blackout. The following set-up will not run if EBT record is in off mode.



When this function is off, EBT will record and adjust the backup time data only at testing mode. If an engineer can run **【Testing UPS to low battery】** from the monitoring software on schedule. This function can set for off to prevent uncontrolled self-adjustment in backup time database.

Recording of the backup time under Test Mode								
Load Level	0%~5%	5%~10%	10%~15%	15%~25%	25%~40%	40%~58%	58%~80%	80%~100%
Corrected value at ± 5% maximum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Exact value as tested	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

There are 8 groups of database for different load levels. The adjustment method of the backup time database can be changed separately according to the load condition. Normally, choose 'exact value as tested' is suggested.

When using the long life battery, the engineer may expect that the database will not change too much each time when engineer run **【Testing UPS to low battery】**. This function can provide a way to control self-adjustment in 5% to prevent wrong adjustment when UPS is not tested with fully charged battery. Please select 'Corrected value at ±5% maximum' according to the load level that UPS is loaded generally.