Part NO. 18950-712-00(A)

DC Power Control Panel
Operation Manual

APM Technologies

Contents

1 Devices List

No.	Description	Qty.
A	SP Series Programmable DC Power Supply	1
B	Power Cable	1
C	RS232 Communication Cable	1
D	USB Communication Cable	1
E	LAN Communication Cable (568A-568A / 568A-568B)	1
F	GPIB Communication Cable	1


C


D

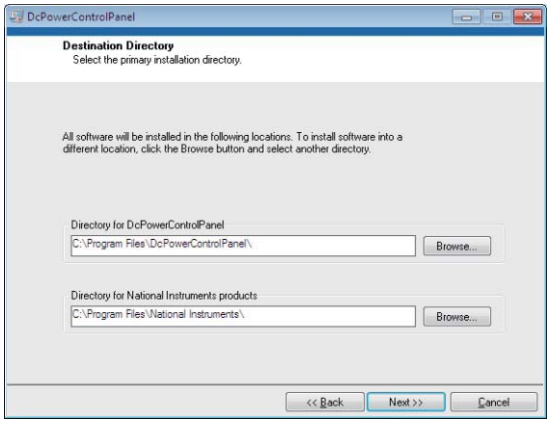

E


F

2 Software Installation and Uninstallation

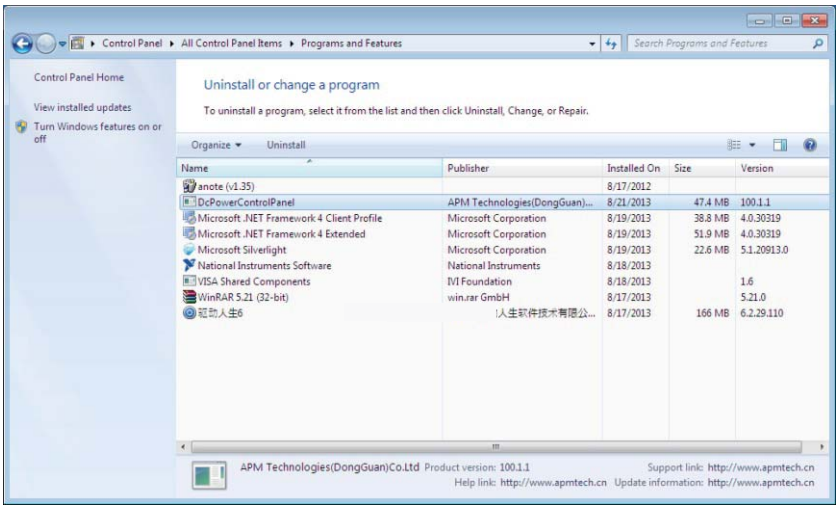
Install exe file inside DC Power Control Panel folder by the following installation instruction.

Click the ‘Next’ button to install the software follow the default location or you can change the location by click the ‘Browse’ button and select another directory.



Then, always click the ‘Next’ button to finish the software installation.

Click to open ‘Control Panel’ - ‘All Control Panel Items’ - ‘Program and Features’, right click the ‘DC Power Control Panel’ and choose ‘Uninstall’ to remove it.



3 Communication Configuration

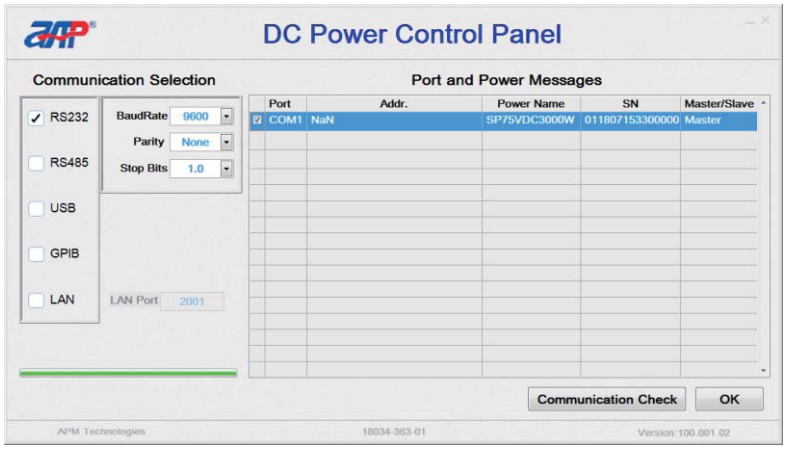
Find ‘DC Power Control Panel’ from ‘Start’ list and click it.

The DC Power Control Panel including RS232, RS485, USB, LAN and GPIB communication mode. To connect the communication cable between DC power supply and the PC which installed the software before remote control.

Under remote operation mode, the ‘REM’ icon will be displayed at the bottom-right corner of the main menu, then all front panel keys are locked. Only by clicking the ‘Exit’ button can release the remote control mode. Then the power supply will switch to local operation mode.

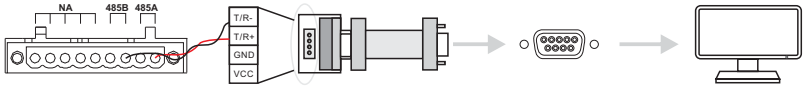
3.1 RS232 communication mode

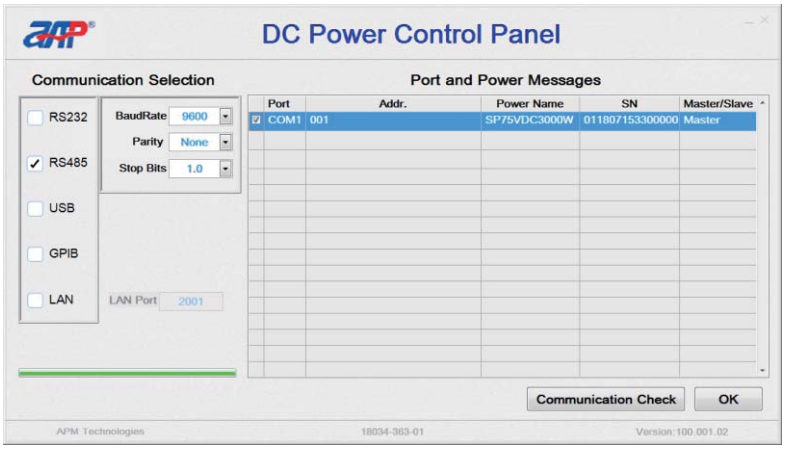
1. Select the ‘RS232’ item first;
2. The Baud Rate, Parity, Stop Bits parameters are the default setting of the DC power supply, which should be configured as the same as that of the power supply.
3. Click ‘Communication Check’ button to search the power connected to the PC by RS232 interface.
4. Click the box before the ‘COM1’, and click the ‘OK’ button, then the software will switch to the Single Mode interface.



3.2 RS485 communication mode

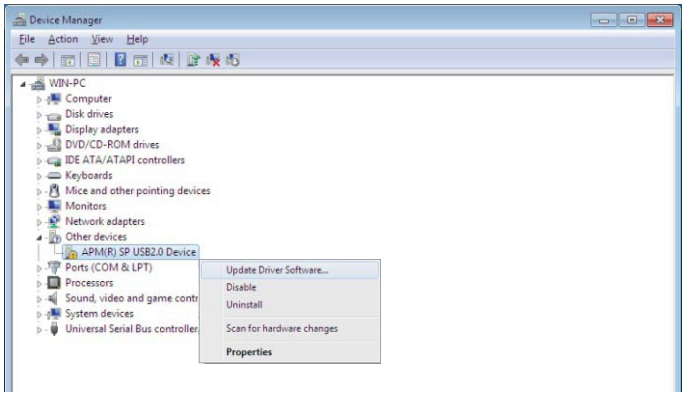
RS485 communication mode can be configured in a similar fashion as RS232 above. For one unit connected to the PC, refer to the following graph. It is recommended to use a STP communication cable.



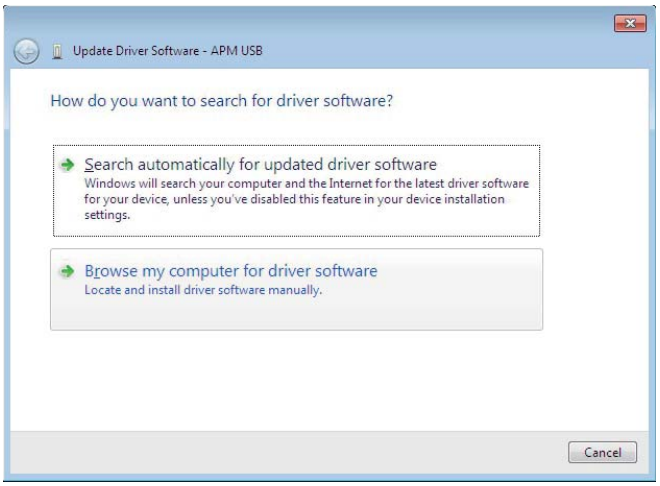


3.3 USB communication mode

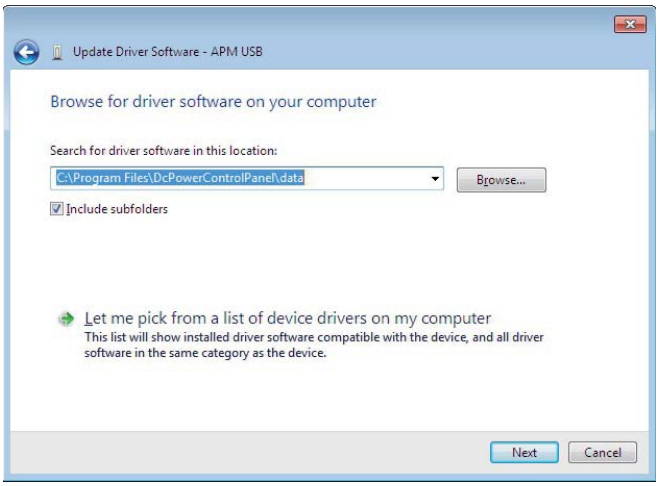
Right click the ‘Computer’ to open ‘Properties’ - ‘Device Manager’, then right click ‘APM (R) SP USB2.0 Device’ to choose ‘Update Driver Software...’.



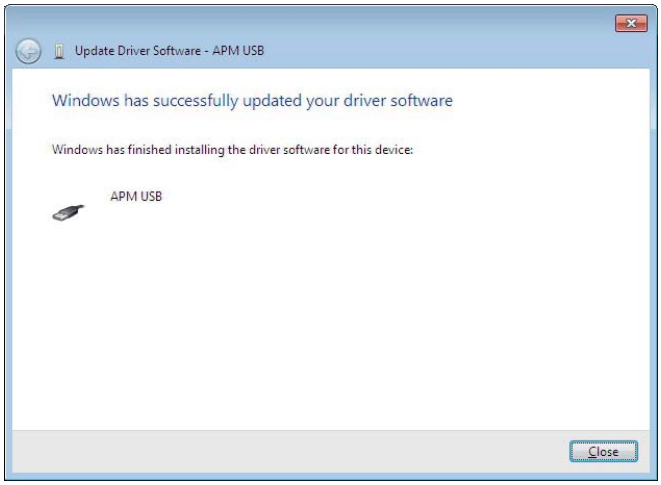
Click ‘Browse my computer for driver software’.



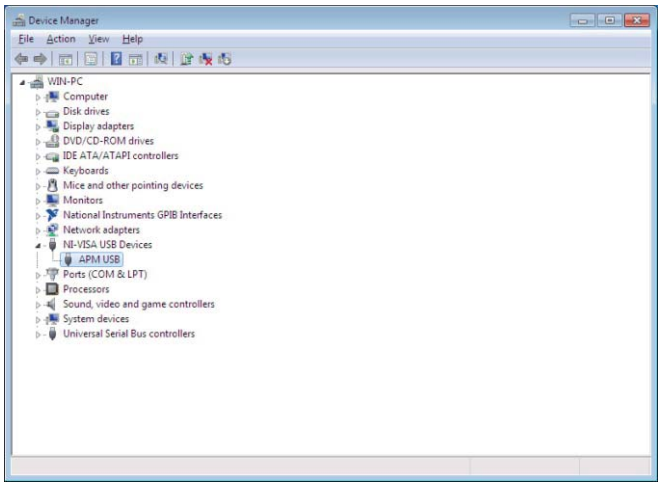
Click the ‘Browse’ button to find the USB driver, and the location is where the software installed. The USB driver is stored in the data folder.

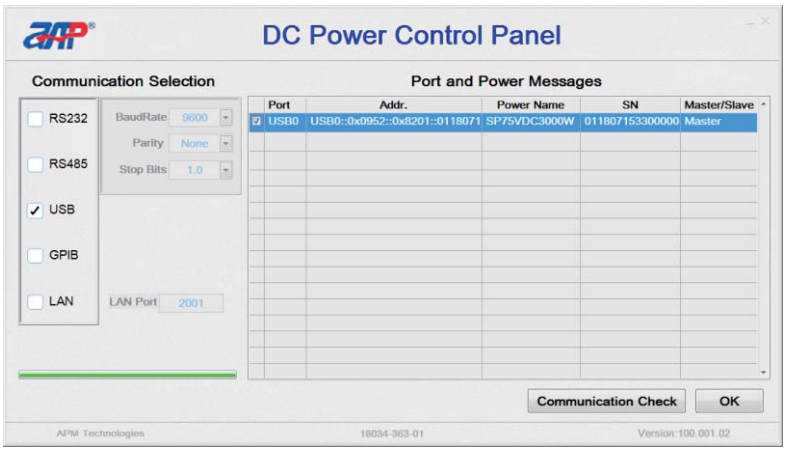


Click the ‘Next’ button to install the USB driver.



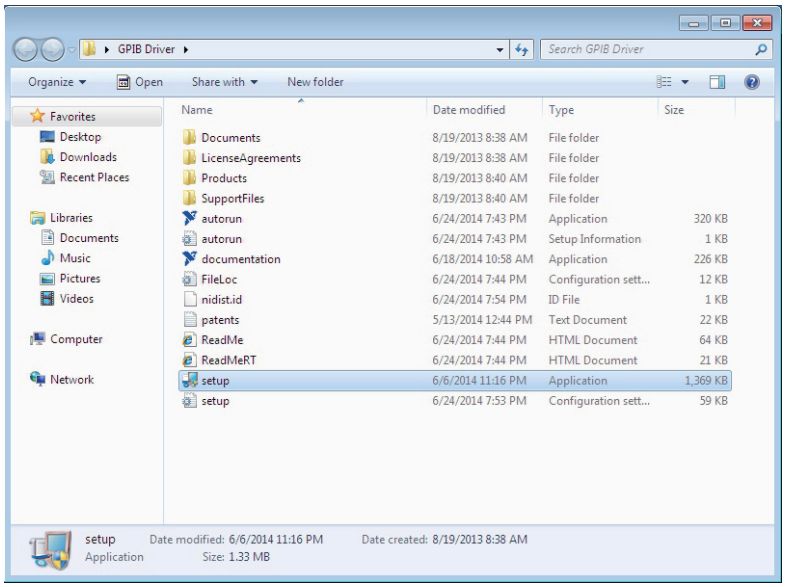
Then the user can use the USB communication.





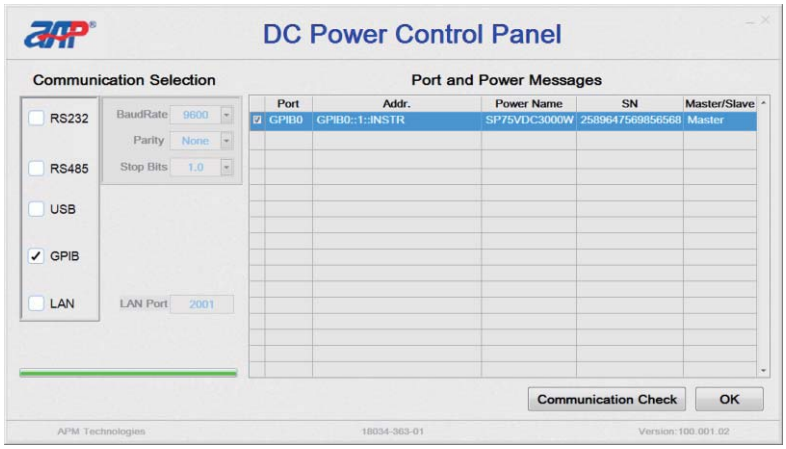
3.4 GPIB communication mode

The user must install the GPIB driver before using GPIB communication.



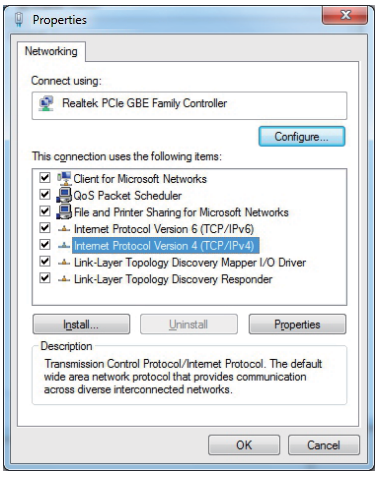
The user can change the GPIB address by pressing the number keys on the front panel of the power supply.

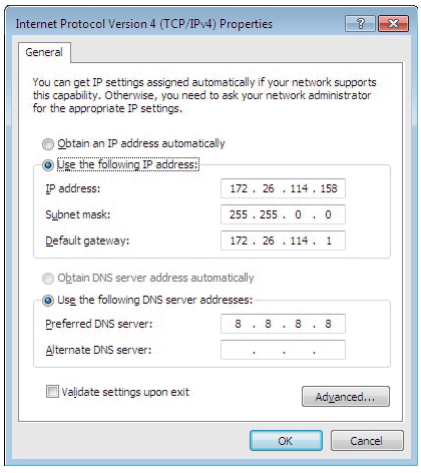
1. Select the ‘GPIB’ item first;
2. Click ‘Communication Check’ button to search the power connected to the PC by GPIB interface.
3. Click the box before the ‘GPIB0’, and click the ‘OK’ button, then the software will switch to the Single Mode interface.



3.5 LAN communication mode

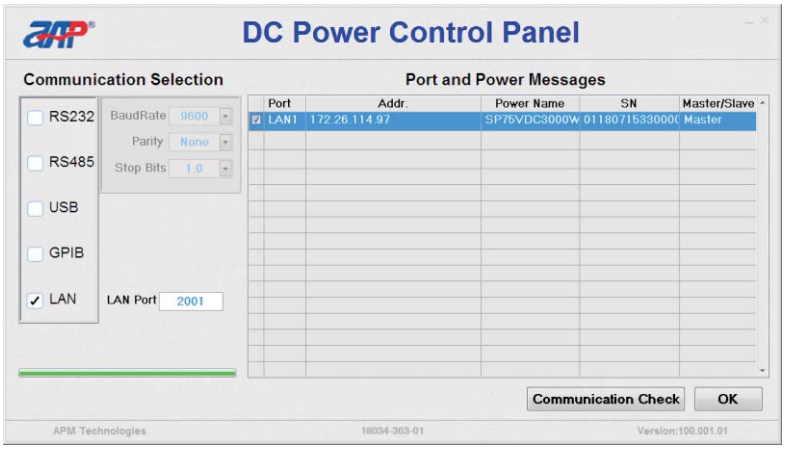
Click to open the program ‘Open Network and Sharing Center’ - ‘Local Area Connection’ - ‘Properties’ - choose ‘Internet Protocol Version 4 (TCP/IP)’ to get the IP setting of the PC.





Change the Ethernet parameter by pressing the number keys on the front panel of the power supply and the PC to be the same network.

For example, in the current situation the IP ADDR should be 172.026.114.*, and the * can be chosen for the unit between 000 and 255. But make sure that the IP address of the unit should be different from any one in this local area network.
The MASK, GETAWAY parameters should be set as the same as that of the PC.
Select the ‘LAN’ item, the default LAN Port is 2001. The user can change this setting by pressing the number keys on the front panel of the power supply, then change the LAN Port of the software to be the same one.



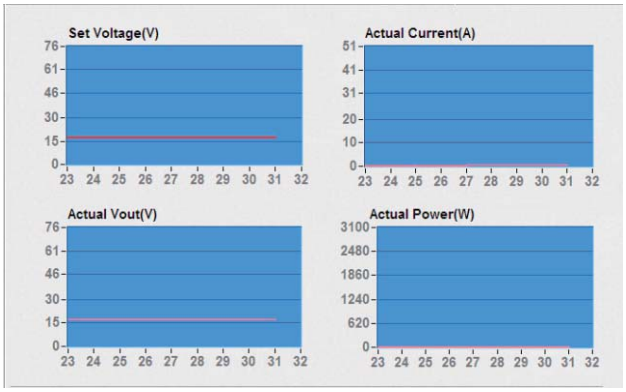
4 Single Mode

4.1 Status zone

1. Single Mode, Multi Mode and Master/slave depend on the connection between the units and the PC, these buttons cannot be selected.
2. Back button, click to back to the ‘Communication Selection’ interface.
3. Help button, click to get the operation manual.
4. Exit button, click to exit the remote control mode.
5. ON/OFF circle, click to on/off the output.

4.2 Waveform display zone

The four waveforms are the voltage setting, voltage measurement, current measurement and output power of the power supply.

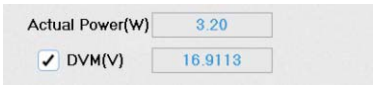


4.3 Knob setting zone

The knob can be used to rapidly change the output voltage setting and current limit setting. Click and move the round point to the target value.

4.4 Power and DVM display zone

The output power will be displayed in real time, but the DVM will be displayed just when the DVM+/- terminals connected to the DUT in a right way.

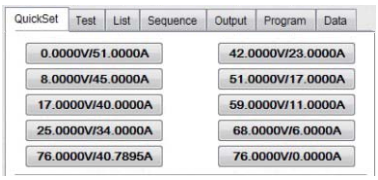


4.5 Multifunctional zone

This zone including Quick set item, Voltage sweep item, Soft keyboard setting item, Test item, List item and Output item.

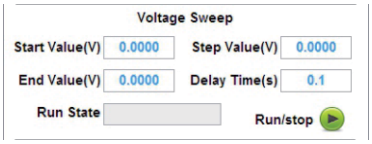
4.5.1 Quick set item

Quick set item consists of 10 groups voltage setting and current setting, which can be changed by customer: right click, select Modify, setting the parameters in the dialogue box and click OK button to finish.



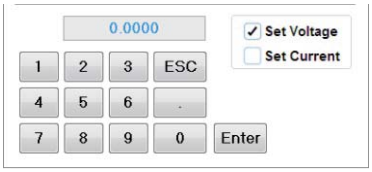
4.5.2 Voltage sweep item

Voltage sweep item is used to set the voltage of power supply gradually rise and drop.



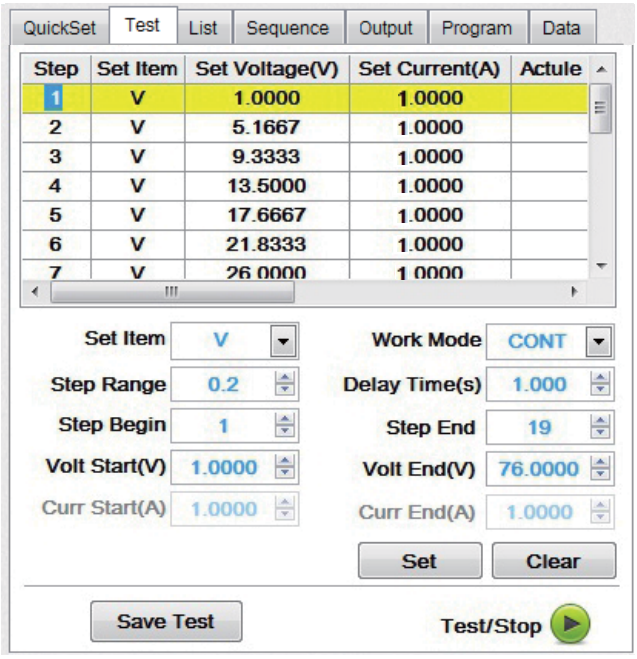
4.5.3 Soft keyboard setting item

The soft keyboard can be used to precisely set the output voltage setting and current limit setting, choose the setting item (choose Set Voltage item or Set Current item first).



4.5.4 Test item

Test item is used to test the voltage or current accuracy of Power Supply.



Set Item, to set test item as voltage (V) or current (C).

Work Mode, to set the testing mode.

Step Range, to set the testing accuracy range.

Delay Time, to set the delay time of each step.

Step Begin & **Step End**, to set the test group quantity.

Voltage Start & **Voltage End**, to set the testing voltage range.

Curr Start & **Curr End**, to set the test current range.

Set button, to store above setting.

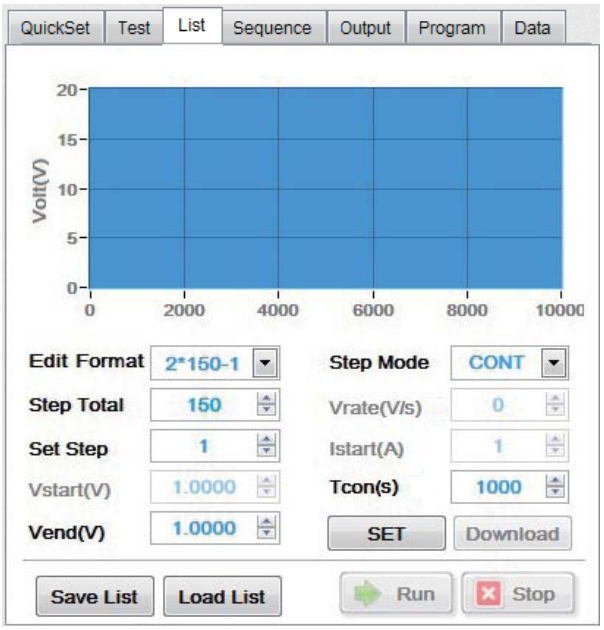
Clear button, to cancel above setting.

Save Test button, to save the result to the computer.

Test/Stop button, to start or stop the testing.

4.5.5 List item

List item by editing the voltage start (Vstart), the voltage end (Vend), Voltage up/down rate (Vrate), current start (Istart), the duration time of voltage end (Tcon) these 5 parameters and 3 kinds of trigger modes (STEP/CONT/LOOP), can be used for any occasion.



Edit Format item, to set the list format, 2*150, 3*25, and 5*30 included.

Step Mode, to set list running mode.

Step Total, to set the total steps of the edited file.

Set step, to set the step in editing.

Vstart, to set the start output voltage.

Vend, to set the end output voltage.

Vrate, to set the rate of voltage change.

Istart, to set the output current.

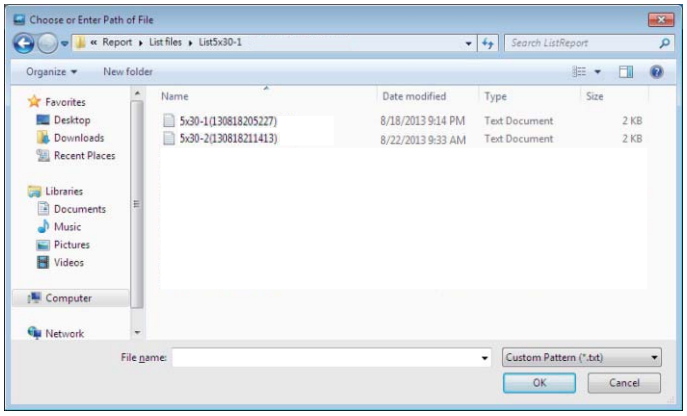
Tcon, to set the duration time of the end voltage.

Set button, to save the setting after all the parameters setting of each step finished.

Download button, to download the setting to the power supply after finish editing the file.

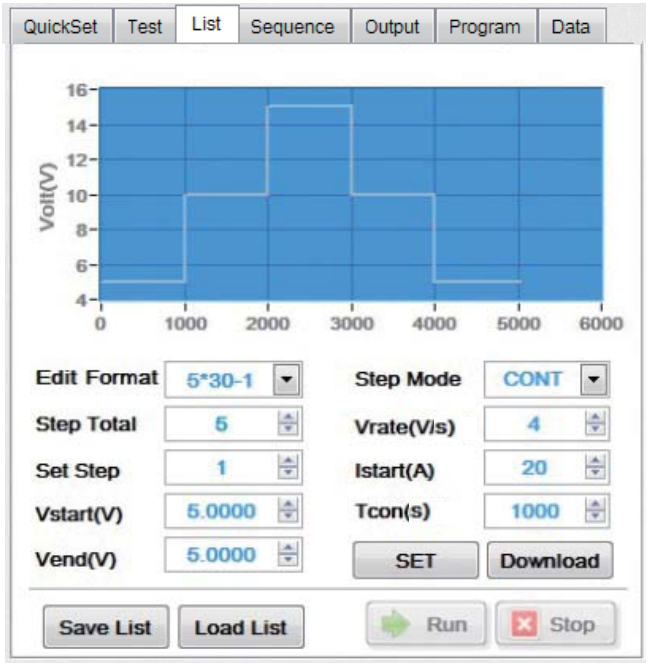
Save List button, to save the list file to the computer.

Load List button, to load the list file saved in the computer if you have saved one.



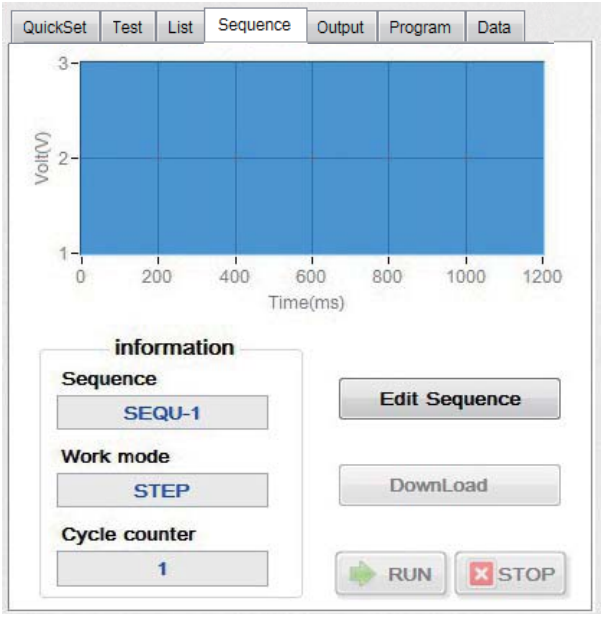
Run button, to trigger the DC power supply to output after the list file has been downloaded to the power supply. Also can be used to trigger the DC power supply to output when Step Mode item has been chosen as STEP or CONT.

Stop button, to make the DC power supply exit the list mode.

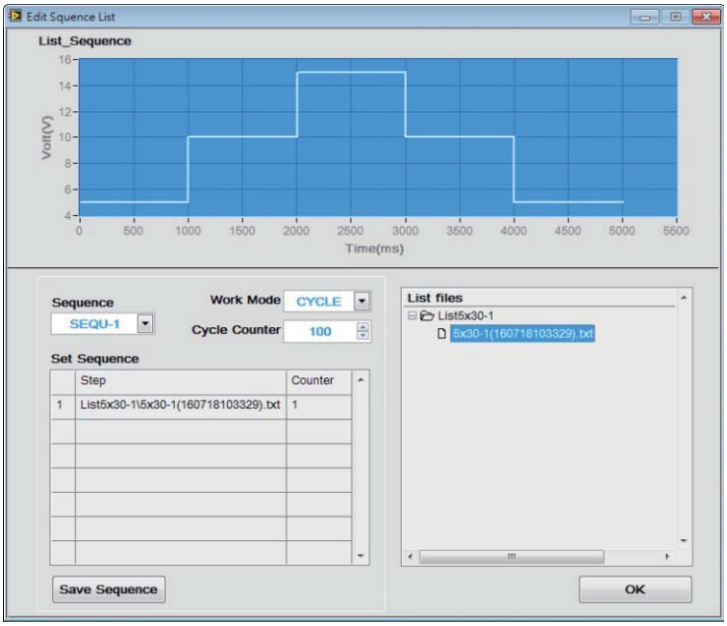


4.5.6 Sequence item

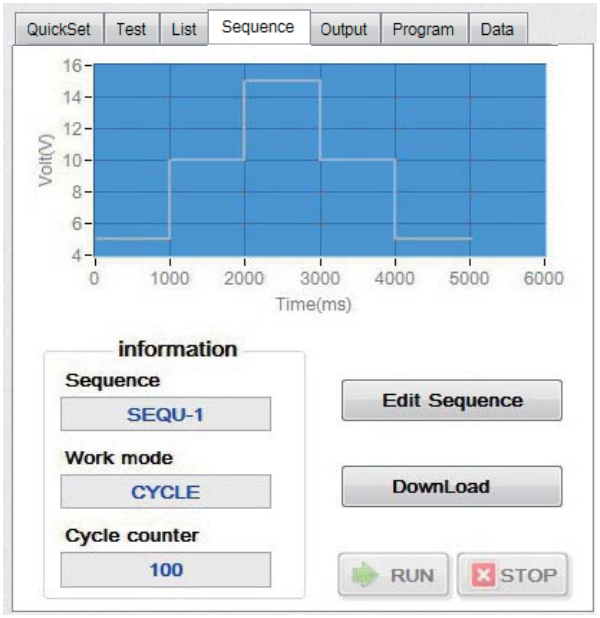
The Sequence function creates DC arbitrary waveforms. These waveforms are made from a number of List files.



Edit Sequence Item, to edit the sequence.



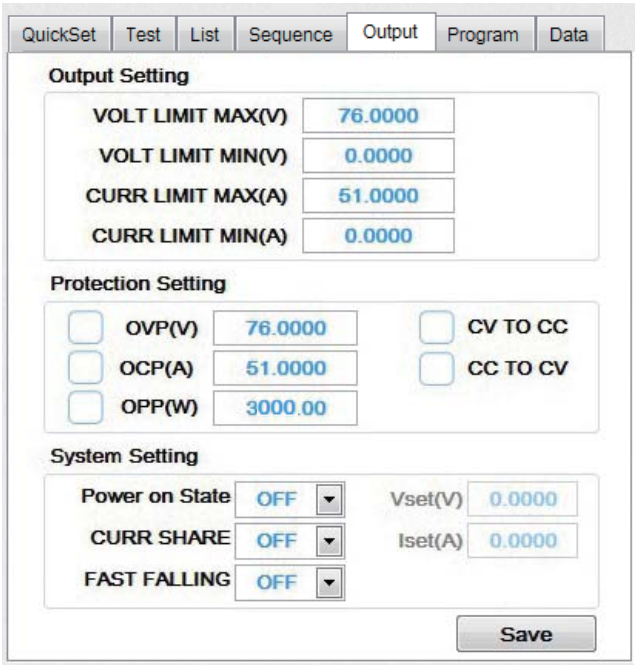
Sequence item, to select the sequence file from SEQU-1 to SEQU-5.
Work Mode item, to set the sequence running mode, including CYCLE and STEP.
Cycle Counter, to set the repeat times when Work Mode set as Cycle. Which comes from 0 to 9999, and 0 means endless loop.
Double click the list files in the right to add it to the sequence file. A sequence function can be comprised of up to 5 steps. Each step of the sequence is a whole list file only can be chosen from 5*30-1 to 5*30-10.
The user also can write the repeat times of each step.
Save Sequence button, to save the sequence file to the computer.
OK button, to jump to Sequence running interface.



Download button, to download the sequence file to the power supply after finish editing the file.
Run button, to trigger the DC power supply to output after the list file has been downloaded to the power supply. Also can be used to trigger the DC power supply to output when Step Mode item has been chosen as STEP.
Stop button, to make the DC power supply exit the sequence mode.

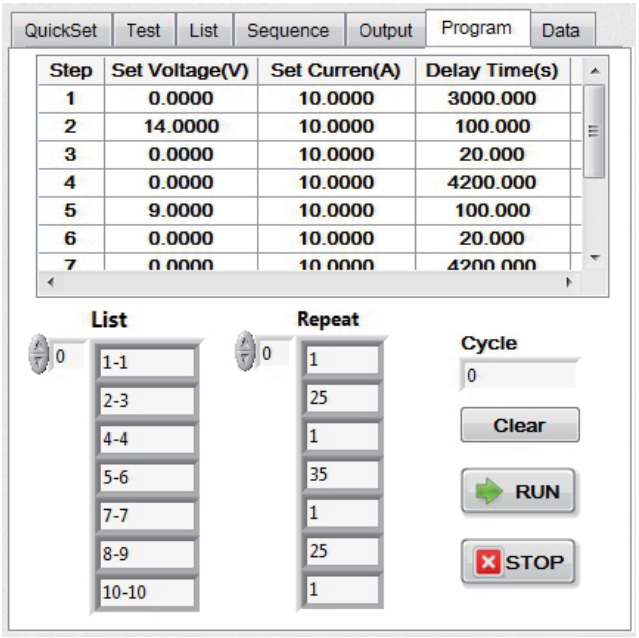
4.5.7 Output item

Output item is used to set the following parameters of the power supply, which can be saved to the power supply only after pressing the save button.



4.5.8 Program item

Program item is used to create the output waveform without setting the slop. The user could set the repeat times of each step or the Program.



Step/Set Voltage/Set Current/Delay Time, to set the settings of each step.

List, to select the steps to create the output waveform.

Repeat, to set the loop times of the corresponding file.

Cycle, to set the loop times of the program.

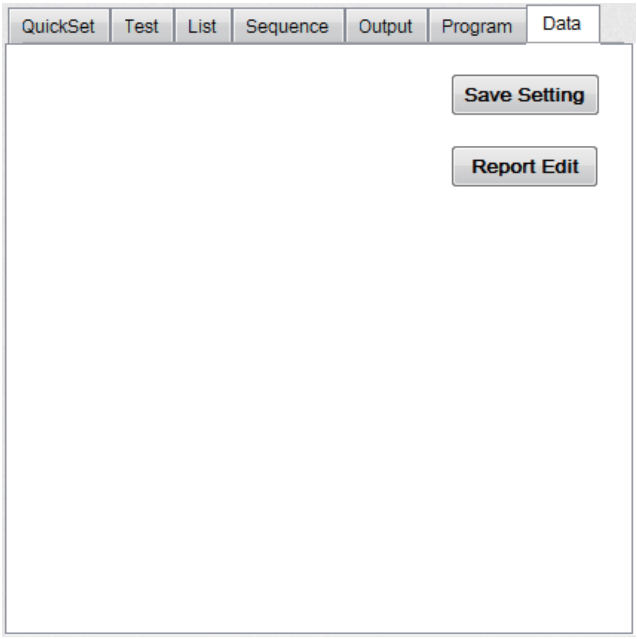
Clear button, to clean the settings.

RUN button, to run the program.

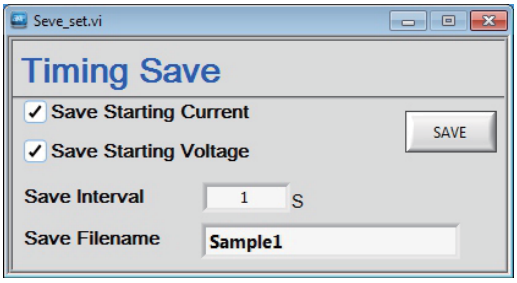
Stop button, to stop the running of the program.

4.5.9 Data item

Data item is used to save the running data in List mode or Program mode.

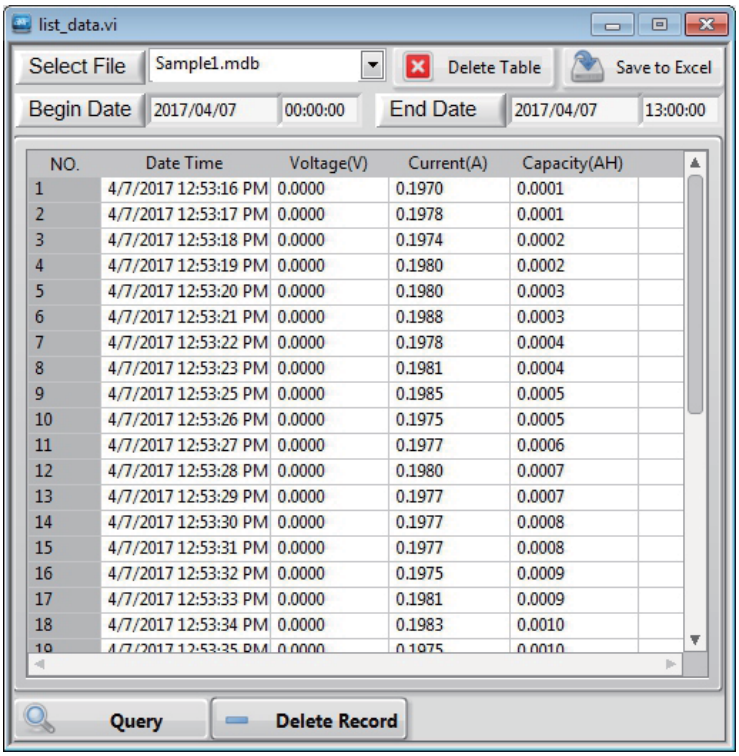


Save Setting



Save Starting Current/Save Starting Voltage, to set the current/voltage to the database.
Save Interval, to set the data saving interval, the shortest interval is 1s.
Save Filename, to name the current program file.

Edit the report.



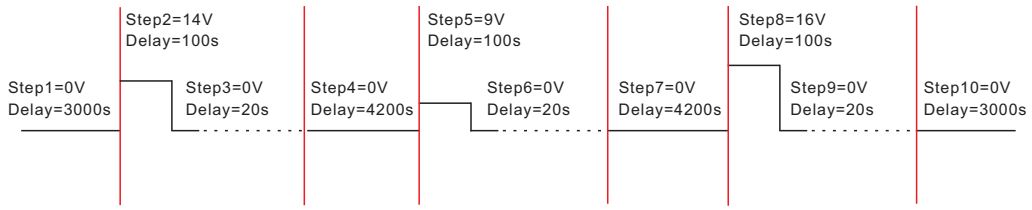
Select File, to select the database.
Delete Table, to delete the database saved on local disk D.
Save to Excel, to save the report by using Excel.
Begin Data/End Data, to set the begin and end time of this running report.
Query, to query the running data.
Delete Record, to clear the running data displayed in the table.

Note: the user must name and save the database before running the List or Program files.

For example

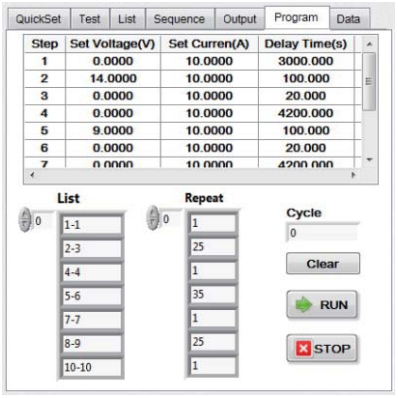
To set the output as following: Power off - 50minutes -> Power on 14V 100s (time) and Power off 20s during 50minutes-> Power off 70minutes -> Power on 9V 100s and Power off 20s during 70minutes-> Power off 70minutes -> Power on 16V 100s and Power off 20s during 50 minutes -> Power off 50minutes.

(1) Waveform Shape



(2) Waveform Edit

List0=(Step)1-(Step)1, Repeat=1;
List1=(Step)2-(Step)3, Repeat=25;
List2=(Step)4-(Step)4, Repeat=1;
List3=(Step)5-(Step)6, Repeat=35;
List4=(Step)7-(Step)7, Repeat=1;
List5=(Step)8-(Step)9, Repeat=25;
List6=(Step)10-(Step)10, Repeat=1;

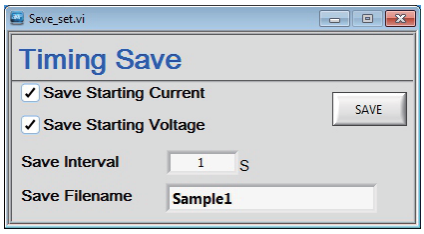


(4) Run the files

Press the “RUN” button to run the file.

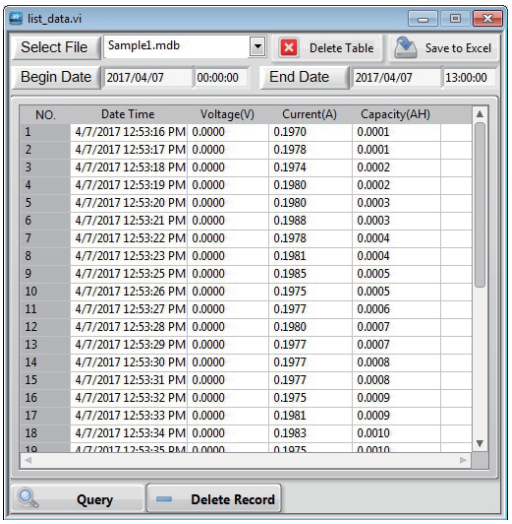
(3) Name the Database

After finish editing the program file, switch to “Data” field, press the Save Setting button, then set the interval and the filename.



(5) Report Edit

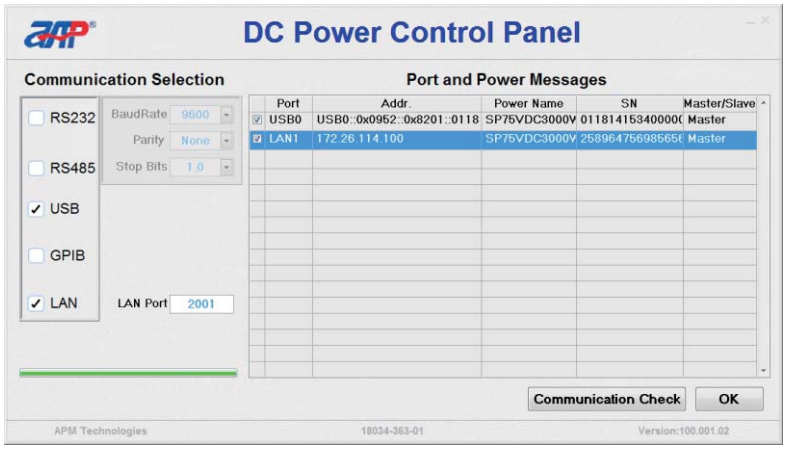
Press the Report Edit button to edit the report after the program has finished running.



5 Multi Mode

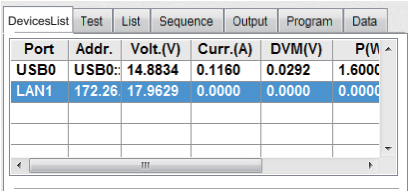
5.1 Configuration

When a computer connects several Programmable DC Power Supplies at the same time, these power supplies will be shown on the form when clicking the ‘Communication Check’ button. Select the supplies you want to control and then click the ‘OK’ button to turn to the Multi Mode interface.



‘Multi Mode’ item will be highlighted.

All the chosen supplies will be shown on the ‘DevicesList’ item.

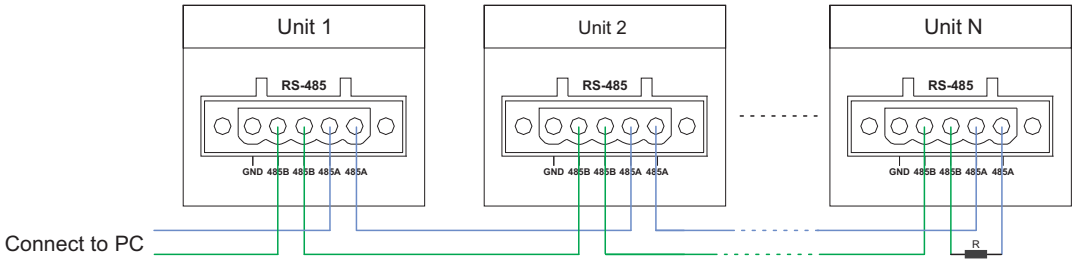


Click the power supply before controlling it. All the settings can be set in a same fashion as that in the Single Mode. The Test item, List item and Output item still work.

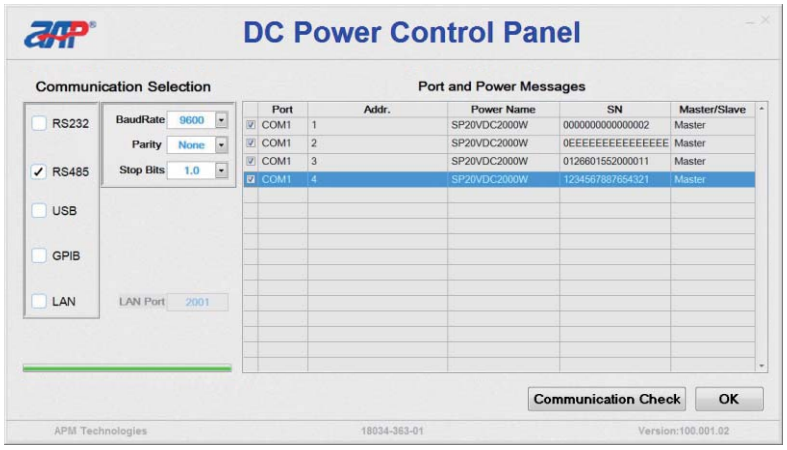
5.2 RS485 Bus

The power supply can use RS485 to provide multi-units series connection function for up to 30 units. Set each unit with a different address and add a 120 ohm resistor terminal in the last unit as shown in the below figure.

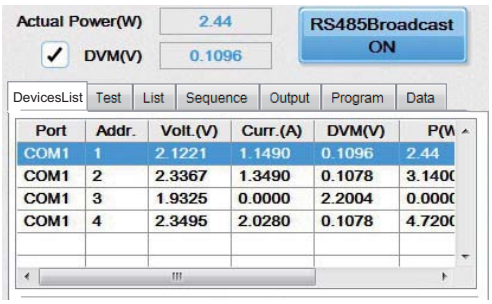
The Master unit should be set as ‘Master/PAR’ or ‘Master/SER’ according to the connections of the outputs of the units in this Master-slave system. Don’t connect different models in parallel or in series.



All the power supplies on the RS485 Bus will be shown on the form when clicking the ‘Communication Check’ button. Select the supplies that you want to control and then click the ‘OK’ button to turn to the Multi Mode interface.



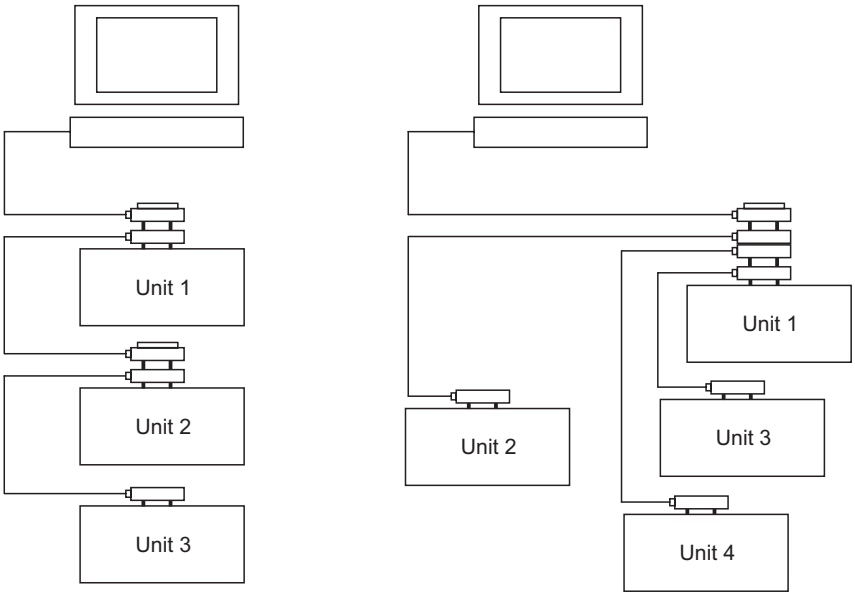
All the chosen supplies will be shown on the ‘DevicesList’ item. Click the power supply before controlling it.



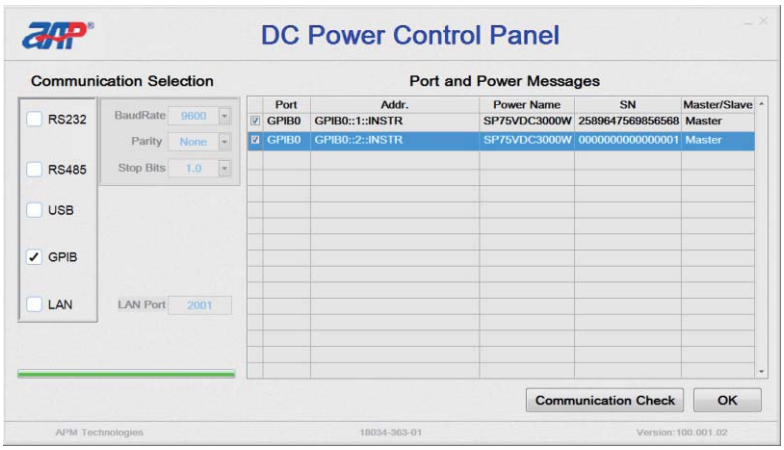
Press the ‘RS485Broadcast’ button to ‘On’ position to enable RS485 global control.

5.3 GPIB Bus

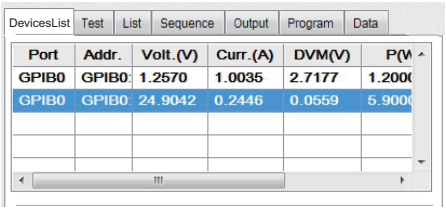
The power supply can use GPIB to provide multi-units series connection function for up to 15 units. Set each unit with a different address (1~30). The power supplies can be connected as linear type, star type or mixed.



All the power supplies on the GPIB Bus will be shown on the form when clicking the ‘Communication Check’ button. Select the supplies that you want to control and then click the ‘OK’ button to turn to the Multi Mode interface.



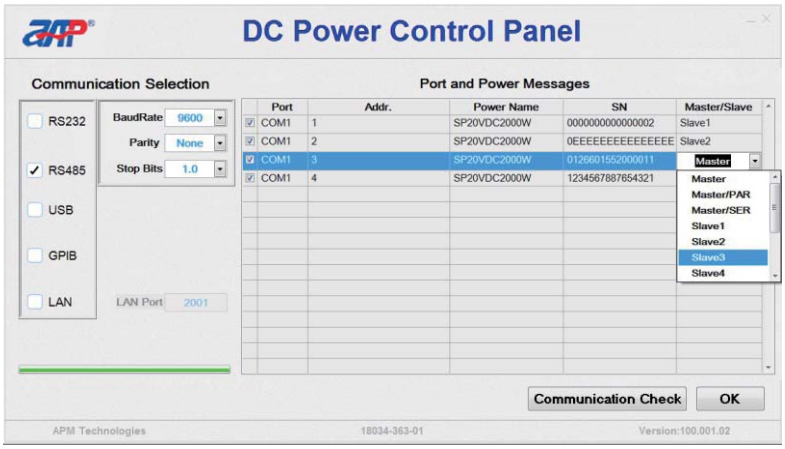
All the chosen supplies will be shown on the ‘DevicesList’ item. Click the power supply before controlling it.

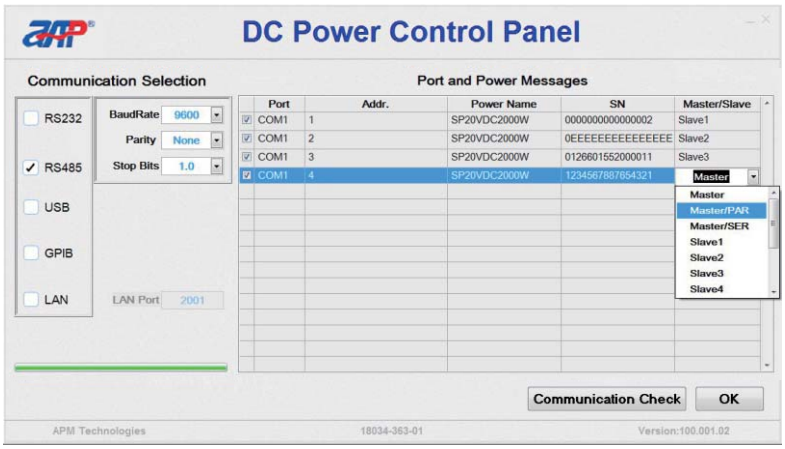


6 Master/Slave

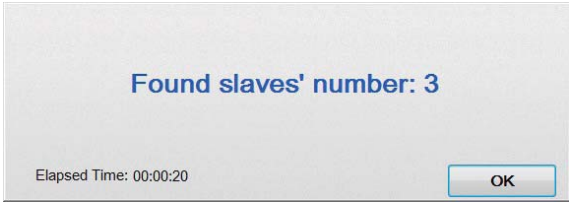
6.1 Configuration

Press the arrow icon on the right of the Master item to set the power supply as ‘Slave 1’, ‘Slave 2’ or ‘Slave 3’ after selecting the power supply.



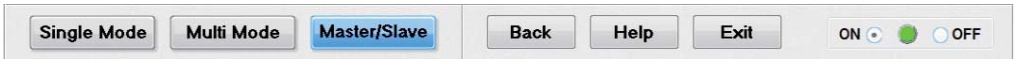


The slaves' number of the slaves that on line will shown on the following interface after pressing the 'OK' button on the Communication Selection Interface.



Press the 'OK' button to turn to Master/Slave interface.
Note: if none slave is found, it will turn to Multi Mode interface.

'Master/Slave' item will be highlighted.



Only the master unit can be controlled by the computer directly.

Master/Slave interface also support List function, the parameters in this part are for the master unit, and all the parameters will be written into the slaves after pressing the ‘Download’ button.

Master/Slave interface also support Output function, the parameters in this part are for the master unit and only that in the Output Setting item, will be written into the slaves as the same as the master unit.

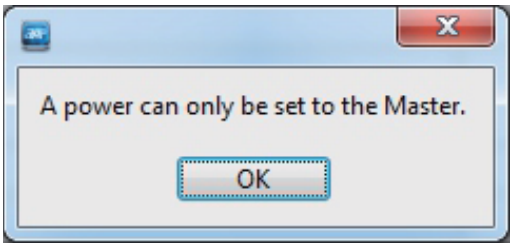
The parameters of the resting parts of the Master/Slave interface are for the Master-slave system.

7 Warning Information

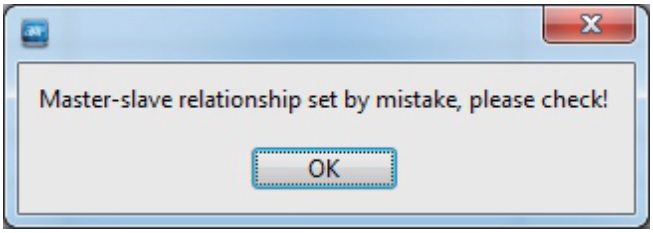
This chapter including the possible warning information which will occur when mistakenly using the monitoring software, or when there is something wrong with the power supply, for which please refer to the user manual to find the solution.

7.1 The Monitoring Software

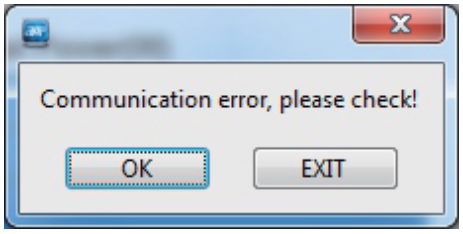
1. When there is only one power supply, which must be set as ‘Master’, or the warning interface will be displayed as shown in the following figure.



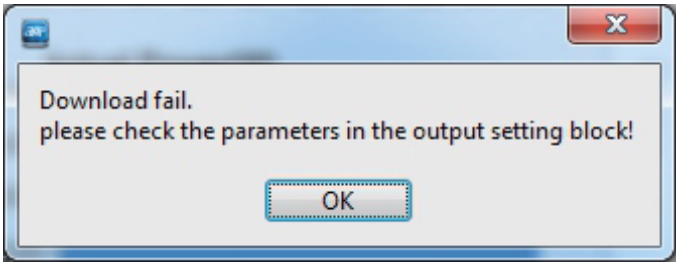
2. When there is some mistakes in the Master-slave system setting, e.g. two SLAVE 1, two connection types mixed and so on, the warning interface will be displayed as shown in the following figure.



3. When abnormal communication occur, e.g. communication cables drop, the warning interface will be displayed as shown in the following figure.

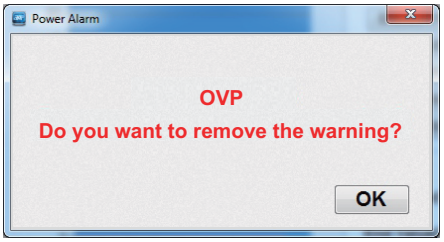


4. When the parameters set in the list file are out of the setting range of the Output Setting part, after pressing the 'Download' button, the warning interface will be displayed as shown in the following figure.

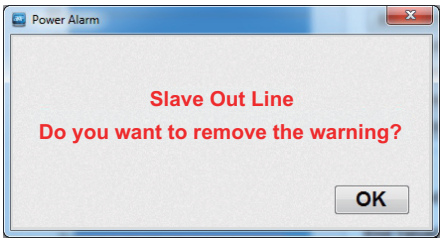


7.2 The Power Supply

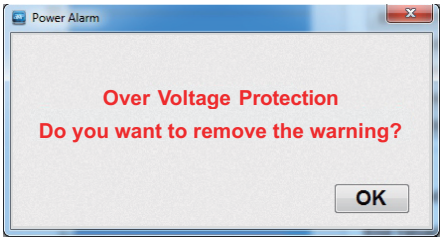
1. When any of the OVP, OCP, OPP, CV TO CC, CC TO CV functions is ON, after the protection is activated, the warning interface will be displayed as shown in the following figure. Press the “OK” button to turn off the buzzer.



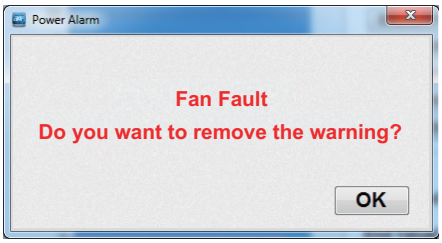
2. When abnormal communication occur, the warning interface will be displayed as shown in the following figure. Press the “OK” button to turn off the buzzer.



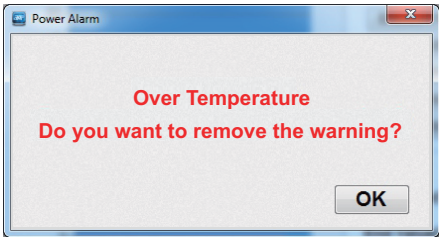
3. When the power’s output voltage is higher than the setting point of hardware OVP shutdown point, the warning interface will be displayed as shown in the following figure. Press the ‘OK’ button to turn off the buzzer.



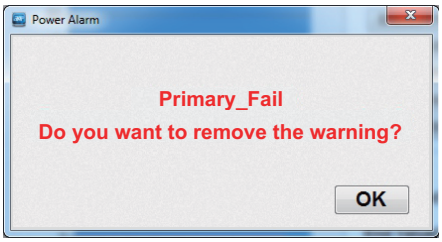
4. If the fan fails, the warning interface will be displayed as shown in the following figure. Press the “OK” button to turn off the buzzer.



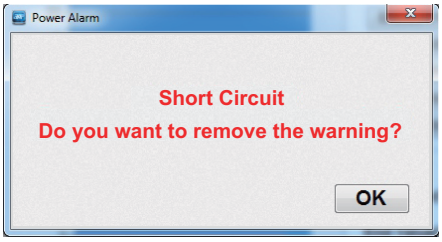
5. If the temperature of the power supplies’ heatsinks exceeds protection limits, the warning interface will be displayed as shown in the following figure. Press the ‘OK’ button to turn off the buzzer.



6. If the primary circuit of the power supply fails, the warning interface will be displayed as shown in the following figure. Press the ‘OK’ button to turn off the buzzer.



7. When an output short circuit condition is detected, the warning interface will be displayed as shown in the following figure. Press the “OK” button to turn off the buzzer.



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