


FA-853

LINEAR PROGRAMMABLE DC POWER SUPPLY



SAFETY NOTES

Read the user's manual before using the equipment, mainly "**SAFETY RULES**" paragraph.

The symbol  on the equipment means "**SEE USER'S MANUAL**". In this manual may also appear as a Caution or Warning symbol.

WARNING AND CAUTION statements may appear in this manual to avoid injury hazard or damage to this product or other property.

USER'S MANUAL VERSION

Version	Date
1.0	July 2016















SAFETY RULES

- * Use this equipment connected **only to systems with their negative of measurement connected to ground potential.**
- * This is a **Class I** equipment, for safety reasons plug it to a **supply line with the corresponding earth connection.**
- * This equipment can be used in **Overvoltage Category II** installations and **Pollution Degree 1** environments.
- * When using some of the following accessories **use only the specified ones** to ensure safety.

Power cord **CA-005**

- * Observe all **specified rating** both of supply and measurement.
- * Remember that voltages higher than **60 V DC** or **30 V AC rms** are dangerous.
- * Use this instrument under the **specified environmental conditions.**
- * **The user is only authorised to** carry out the following maintenance operations:
 - Replace the mains fuse that must be of the **type** and **value specified.**
 - On the Maintenance paragraph the proper instructions are given.
 - Any other change on the equipment should be carried out by qualified personnel.
- * **Do not obstruct the ventilation system** of the instrument.
- * Follow the **cleaning instructions** described in the Maintenance paragraph.

* Symbols related with safety:

	DIRECT CURRENT		ON (Supply)
	ALTERNATING CURRENT		OFF (Supply)
	DIRECT AND ALTERNATING		DOUBLE INSULATION (Class II protection)
	GROUND TERMINAL		CAUTION (Risk of electric shock)
	PROTECTIVE CONDUCTOR		CAUTION REFER TO MANUAL
	FRAME TERMINAL		FUSE
	EQUIPOTENTIALITY		EQUIPMENT OR COMPONENT TO BE RECYCLED

Descriptive Examples of Over-Voltage Categories


Cat I Low voltage installations isolated from the mains.

Cat II Portable domestic installations.

Cat III Fixed domestic installations.

Cat IV Industrial installations.

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LINEAR PROGRAMMABLE DC POWER SUPPLY **FA-853**

1 INTRODUCTION

1.1 Description

FA-853 product are new high-performance programmable linear DC power supplies. The excellent features of this series include up to 100 output groups with configurable timer, high-resolution LCD display, extremely clean ripple and noise, comprehensive over-voltage over-current over-temperature protection, user friendly interface and panel layout, and variety standard interfaces to meet diverse test requirements.

1.2 Features and benefits

- Dual Independent & Separate Control Outputs.
- Outstanding line regulation rate: $\leq 0.01\% + 3 \text{ mV}(\text{voltage}), \leq 0.1\% + 3 \text{ mA}(\text{current})$.
- Outstanding load regulation rate: $\leq 0.01\% + 3 \text{ mV}(\text{voltage}), \leq 0.2\% + 3 \text{ mA}(\text{current})$.
- Low ripples noise: $\leq 300 \mu\text{V}_{\text{rms}} / 2 \text{ mV}_{\text{pp}}$.
- Four operating mode: independent, parallel connection, series connection, plus-minus.
- Up to 100 groups time settings.
- High-precious resolution output.
- 3.9 inch high resolution (480 * 320 pixels) TFT LCD display.
- Interface: USB2.0, RS232.

2 OPERATION

2.1 Front/Rear Panel

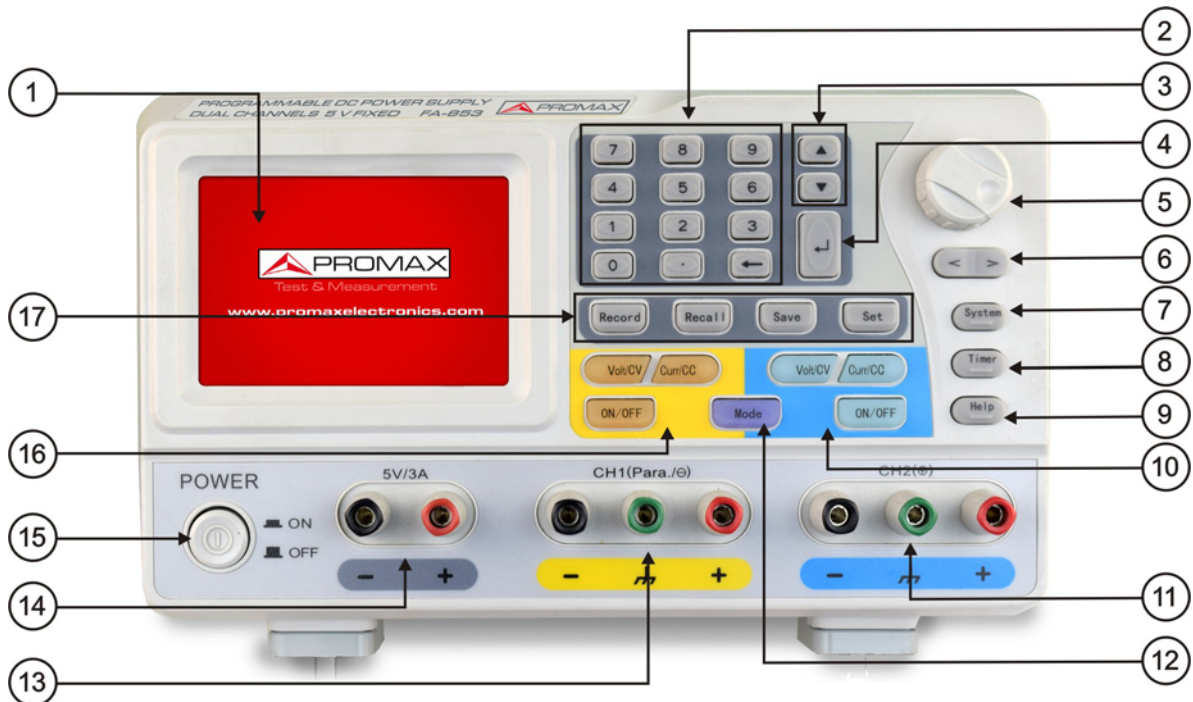


Figure 1. Front panel description.

- ① **LCD:** Display the user interface.
- ② **Numeric keys area:** Parameter input, include the numeric keys, decimal point and backspace key.
- ③ **Up and down direction key:** Select menu or change the parameter.
- ④ **Enter key:** Enter menu or confirm the parameter entered.
- ⑤ **Knob:** Select menu or change the parameter, pressing it has the same effect as pressing the enter key.
- ⑥ **Left and right direction key:** Select menu or move the cursor.
- ⑦ **System key:** Enter the system menu.
- ⑧ **Timer key:** Enter/exit timer status.
- ⑨ **Help key:** View the built-in help.
















- 10 **Channel 2 control area:**
- Blue**  **key:** Set the output voltage of Channel 2.
- Blue**  **key:** Set the output current of Channel 2.
- Blue**  **key:** Enable/disable the output of Channel 2.
- 11 **Output terminals of Channel 2:** Channel 2 output connectors.
- 12 **Mode key:** Switch the working mode between Independent, Parallel, Series and Plus-minus.
- 13 **Output terminals of Channel 1:** Channel 1 output connectors.
- 14 **5 V output terminals:** Output fixed 5 V , max output current is 5A.
- 15 **Power button:** Turn on/off the instrument.
- 16 **Channel 1 control area:**
- Orange**  : Set the output voltage of Channel 1.
- Orange**  **key:** Set the output current of Channel 1.
- Orange**  **key:** Enable/disable the output of Channel 1.
- 17 **Function keys:**
-  **key:** Record the current output data as a txt file and save to USB disk.
-  **key:** Recall the stored settings file.
-  **key:** Save the current setting parameters.
-  **key:** Enter/exit the setting interface of timing output.
- **Instructions for panel key indicator**
-  **key:** The indicator will be lighted after you turn on the channel.
-  **key:** The indicator will be lighted when the channel is in Constant Voltage output mode; blinking indicates you are setting the output voltage through the input box.
-  **key:** The indicator will be lighted when the channel is in Constant Current output mode; blinking indicates you are setting the output current through the input box.



Figure 2. Rear panel description.

- ① **USB Host port:** Connect as a "host device" with an external USB device, such as connect a USB disk to the instrument.
- ② **USB Device port:** Connect as a "slave device" with an external USB device, such as connect the instrument to a PC.
- ③ **COM port:** Connect the instrument with external equipment as serial port.
- ④ **Power socket:** AC input conector.
- ⑤ **Fuse:** Use the specified fuse according to the voltage scale.
- ⑥ **Power switch:** Switch between 110 V and 220 V.
- ⑦ **Fan:** Fan inlet.



2.1.1 User Interface

► Independent Mode

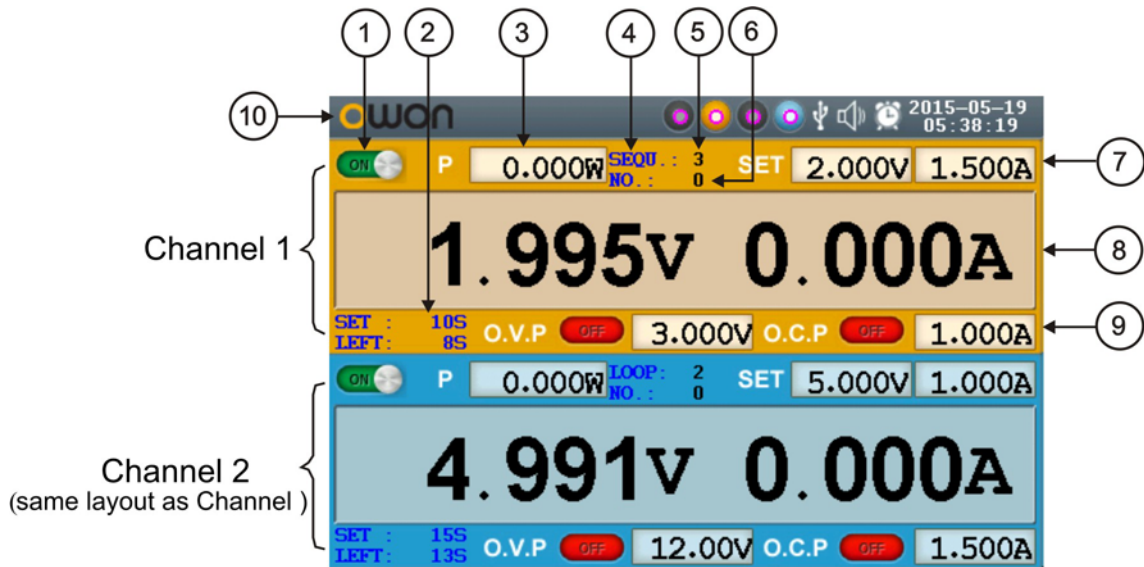


Figure 3. User Interface description.

- ① Output status of Cannel 1.
- ② Specified time and left time of current output when the timing output of Channel 1 is on.
- ③ Actual output value of power for Channel 1.
- ④ Timing output mode of Channel 1 (Sequence / Loop).
- ⑤ Timer range of Channel 1.
- ⑥ The parameter number of the current output when the timing output of Channel 1 is on.
- ⑦ Set values of voltage and current for Channel 1.
- ⑧ Actual output values of voltage and current for Channel 1.
- ⑨ Status and set values of O.V.P and O.C.P for Channel 1 in current status.
- ⑩ Status icons, see "**Status Icons**" on P10 for more details.



▶ Parallel /Series Mode

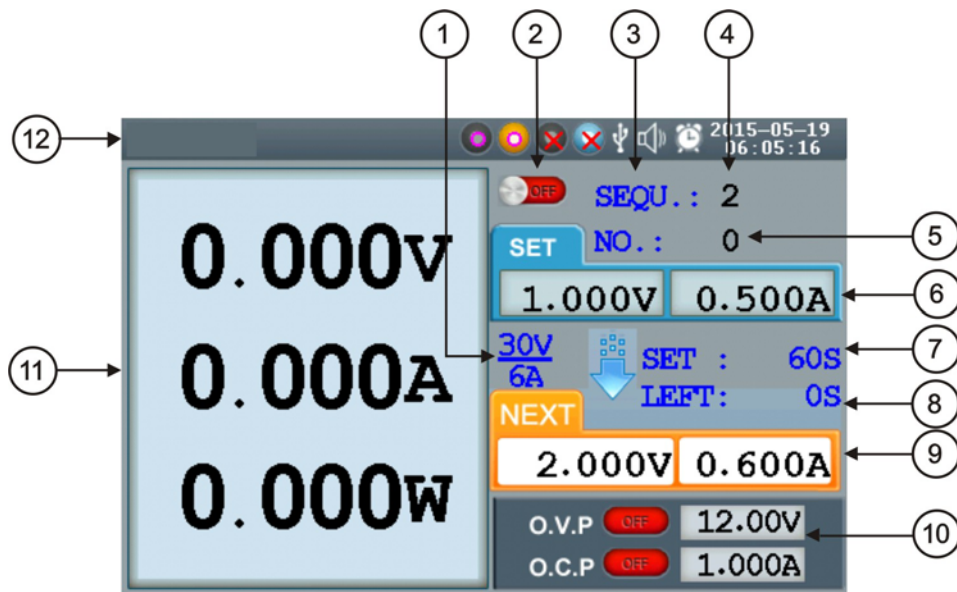


Figure 4. User interface in Parallel/Series mode.

- ① Maximum ratings of voltage and current.
- ② Channel status.
- ③ Output mode of timing output (Sequence / Loop).
- ④ Timer range.
- ⑤ The parameter number of the current output when the timing output is on.
- ⑥ Specified values of voltage and current.
- ⑦ Specified time of current output when the timing output of is on.
- ⑧ Left time of current output when the timing output of is on.
- ⑨ Specified values of voltage and current that will be output at the next fixed times when the timing output of is on.
- ⑩ Status and set values of O.V.P and O.C.P in current status.
- ⑪ Actual output values of voltage , current and power.
- ⑫ Status icons, see "**Status Icons**".



► Plus-minus Mode

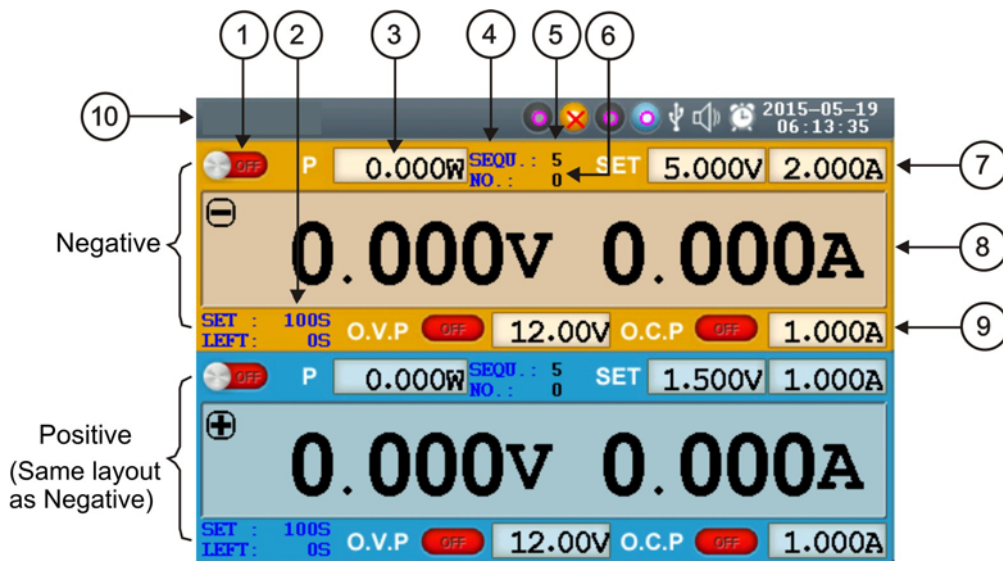





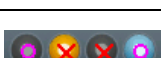






Figure 5. User interface in Plus-minus mode.

- ① Output status of Negative (same as Positive).
- ② Specified time and left time of current output when the timing output of Negative is on.
- ③ Actual output value of power for Negative.
- ④ Timing output mode of Negative (Sequence / Loop, same as Positive).
- ⑤ Timer range of Negative (same as Positive).
- ⑥ The parameter number of the current output when the timing output of Negative is on (same as Positive).
- ⑦ Set values of voltage and current for Negative.
- ⑧ Actual output values of voltage and current for Negative.
- ⑨ Status and set values of O.V.P and O.C.P for Negative in current status.
- ⑩ Status icons, see "Status Icons".



2.1.2 Status Icons

Icons	Instruction
	Connect as a slave device with PC.
	Recording the current output.
	A USB device is detected.
	Current working mode is Independent.
	Current working mode is Parallel.
	Current working mode is Series.
	Current working mode is Plus-minus.
	The buzzer is on.
	The buzzer is off.
	The system is in Timer Status.

2.2 General Inspection

After you get a new **FA-853** power supply, it is recommended that you should make a check on the instrument according to the following steps:

- 1. Check whether there is any damage caused by transportation.**
 If it is found that the packaging carton or the foamed plastic protection cushion has suffered serious damage, do not throw it away first till the complete device and its accessories succeed in the electrical and mechanical property tests.
- 2. Check the Accessories.**
 The supplied accessories have been already described in the "Appendix A: Enclosure" of this Manual. You can check whether there is any loss of accessories with reference to this description. If it is found that there is any accessory lost or damaged, please get in touch with the distributor of PROMAX responsible for this service or the PROMAX local offices.



3. Check the Complete Instrument.

If it is found that there is damage to the appearance of the instrument, or the instrument can not work normally, or fails in the performance test, please get in touch with the PROMAX distributor responsible for this business or the PROMAX local offices. If there is damage to the instrument caused by the transportation, please keep the package. With the transportation department or the PROMAX distributor responsible for this business informed about it, a repairing or replacement of the instrument will be arranged by the PROMAX.

2.3 Power-On Check

2.3.1 AC Power Input Setting

Adopt 110 V / 220 V AC power source. Users should regulate the voltage scale of the **Power Switch** according to the standards in their own country at the rear panel and use an appropriate fuse.

Voltage	Fuse
AC 110 V	125 V, F5 A
AC 220 V	250 V, F3 A

To change the voltage scale of the instrument, do the following steps:

- 1 Turn off the power button at the front panel and remove the power cord.
- 2 Check if the fuse installed before leaving factory (250 V, F3 A) can match with the selected voltage scale; if not, pry the cover open using a straight screwdriver, change the fuse.
- 3 Regulate the **Power Switch** to the desired voltage scale.

2.3.2 Power On

- 1 Connect the instrument to the AC supply using the supplied power cord.

Warning:



To avoid electric shock, the instrument must be grounded properly.

- 2 Press down the **power button** at the front panel, the screen shows the boot screen.
- 3 Press any key to enter.



2.4 Output Inspection

Output inspection is to ensure that the instrument can achieve its rated outputs and properly respond to operation from the front panel. For the procedures below, it is suggested that you read "Working Mode", "Turn On/Off the Channel Output" and "Set the Output Voltage/Current".

2.4.1 Voltage Output Inspection

The following steps verify basic voltage functions without load:

- 1 When the instrument is under no load, power on it; make sure that the output current setting value of each working mode is none-zero.
- 2 Turn on the channel output. The **ON/OFF** and **Volt/CV** key is lighted, which indicates the channel you opened is in Constant Voltage output mode.
- 3 In each working mode, set some different voltage values; check if the actual voltage value displayed is close to the set voltage value, and to check if the actual current value displayed is nearly zero.
- 4 Check that if the output voltage can be adjusted from zero to the maximum rating.

2.4.2 Current Output Inspection

The following steps check basic current functions with a short across the power supply's output:

- 1 Power on the instrument.
- 2 Connect a short across (+) and (-) output terminals with an insulated test lead. Use a wire size sufficient to handle the maximum current.
- 3 Set the output voltage to the maximum rating.
- 4 Turn on the channel output. The **ON/OFF** and **Curr/CC** key is lighted, which indicates the channel you opened is in Constant Current output mode.
- 5 In each working mode, set some different current values; check if the actual current value displayed is close to the set current value, and to check if the actual voltage value displayed is nearly zero.
- 6 Check that if the output current can be adjusted from zero to the maximum rating.
- 7 Turn off the channel output and remove the short wire from the output terminals.



2.5 Working Mode

FA-853 are designed with four working modes: Independent, Parallel, Series and Plus-minus. Press the **Mode** key to switch between the four working modes. For the instructions of the user interfaces in the four working mode, please see "User Interface".

2.5.1 Icons and Ratings

The status icons and voltage/current ratings of the four mode is listed below.

	Independent	Parallel	Series	Plus-minus
Status Icons				
Voltage rating	0 ~ 30 V	0 ~ 30 V	0 ~ 60 V	0 ~ ±30 V
Current ratings	0.02 ~ 3 A	0.1 ~ 6 A	0.02 ~ 3 A	0.02 ~ 3 A

The 5 V output terminals always output fixed 5 V during the instrument is powered on, the max output current is 3 A. Users could choose the proper mode and output terminals as required.

2.5.2 Connections

Take for instance:

► Independent

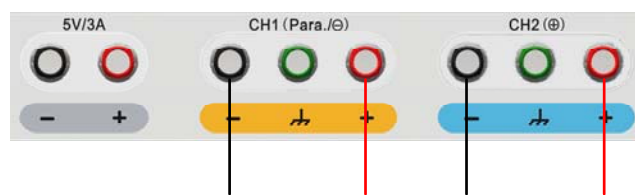


Figure 6.

► Parallel

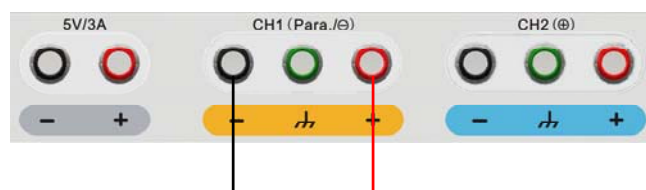


Figure 7.



Note: In parallel mode, CH1 is main channel and CH2 is auxiliary channel. To ensure normal output, please connect the load to the main channel. Connecting to auxiliary channel could not ensure normal output.

► Series

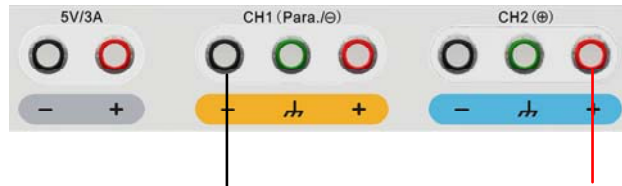


Figure 8.

► Plus-minus

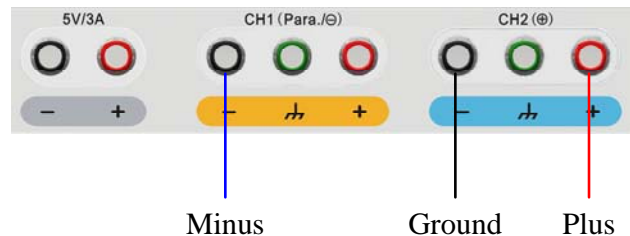


Figure 9.

2.6 System Menu Operation

1 Display the menu

Press **System** key, the System menu is shown on the screen.

2 Choose the menu

- Press **▲** / **▼** direction key or turn the **knob** to move around the menu items.
- Press any one of the **<** **>** direction key, the **↵** key or the **knob** to enter the submenu; to return to main menu, press the **<** **>** direction key.
- In the submenu, press **▲** / **▼** direction key or turn the **knob** to move around the submenu items.


3 Enter the menu

Press the **↵** key or the **knob** to enter the selected menu item.



4

Exit the menu

Press  key to close the menu or the pop-up box.

Note: In this document, [System → CH1 → O.V.P] means:



- Enter the **CH1** item in **System** menu, and then choose the **O.V.P** submenu.





3 PANEL OPERATION

3.1 Turn On/Off the Channel Output

▶ Independent Mode

- 1 Press the  key to turn on/off the Channel 1 output.
- 2 Press the  key to turn on/off the Channel 2 output.
- 3 The **ON/OFF** key is lighted when the corresponding channel is on.

▶ Parallel, Series and Plus-minus Mode



- 1 Press the  key to turn on/off the channel output.
- 2 The  key is invalid.







3.2 Set the Output Voltage/Current

You can set the output voltage/current through input box. About the rated range of each mode, please refer to "*Icons and Ratings*".

Note: The output voltage/current cannot be set in Timer status. If you want to set it, you should exit the Timer status first.



▶ Independent Mode

- 1 Press the  or  key, the input box of Channel 1 output voltage/current will pop up.
- 2 The key light will start blinking, indicating to input, there are two methods to change the value:

Modify: Turn the **knob** or press the  /  direction key to change the value by the unit of cursor position, hold down the  /  direction key to change continuously. Press the   key to move the cursor.



Input: Use the numeric keys to enter a desired value, the original value will be cleared, and display the value you entered.

- 3 Press the  key to confirm.



In the same way, press the  or  key to set the output voltage/current of **Channel 2**.



▶ **Parallel/Series mode**

- 1 Press the  or  key, the input box of output voltage/current will pop up.
- 2 The operation of input box is the same as **Independent mode**.

▶ **Plus-minus mode**

- 1 Press the  or  key, the input box of **Negative** output voltage/current will pop up.
- 2 The operation of input box is the same as **Independent mode**.

Note: If the input value is out of the rated range, the box prompts "ERROR"; you need to input another value within the rated range.
In Series mode, the minimum rating of the current is 0.1 A; in other modes is 0.02 A.

3.3 **Over Voltage/Current Protection**

When the Over Voltage Protection (O.V.P) or Over Current Protection (O.C.P) is enabled, once the output voltage/current reaches the set value of O.V.P / O.C.P, the instrument will cut off the output. The value of O.V.P / O.C.P which causes cutting off will turn red and flashing; the instrument will make a buzzing sound if the buzzer is turned on.

Note: When the instrument disables the output due to protection, after you make some adjustments, the channel must be restarted to output normally.

This function can keep the power output from exceeding the load rating in order to protect the load. The O.V.P / O.C.P can be set separately for the four working mode and for different status (normal, timer). You can enable or disable these functions as required.

The parameters of the O.V.P / O.C.P set in normal status take effect in normal status. The parameters of the O.V.P / O.C.P set in timer status take effect in timer status.

Note: In Plus-minus mode, if either of the Positive or Negative output voltage/current reaches its own O.V.P / O.C.P, the instrument will disable the output.




3.3.1 Set O.V.P

- 1 Enter the O.V.P setting menu:


Independent Mode



Press the  key, enter [System → CH1 (CH2) → O.V.P].

Parallel, Series Mode


Press the  key, in normal status, enter [System → O.V.P]; in timer status, enter [System → Pro Set → O.V.P].

Plus-minus Mode

Press the  key, enter [System → Positive (Negative) → O.V.P].

- 2 A setting box pops up, press the  /  key to switch the state of the O.V.P between "ON" or "OFF", the O.V.P in current mode and status is enabled or disabled.

Note: In Plus-minus mode, the O.V.P status of Positive and Negative will remain consistent, you can set either of them. The O.V.P value can be set separately.

- 3 Use the numeric keys to enter the O.V.P value in current mode and status. The maximum in Independent, Parallel, Plus-minus mode is 31.5 V, the maximum in Series mode is 63 V. Press the  key to confirm.


3.3.2 Set O.C.P

- 1 Enter the O.C.P setting menu:


Independent Mode



Press the  key, enter [System → CH1 (CH2) → O.C.P].

Parallel, Series Mode

Press the  key, in normal status, enter [System → O.C.P]; in timer status, enter [System → Pro Set → O.C.P].


Plus-minus Mode

Press the  key, enter [System → Positive (Negative) → O.C.P].

- 2 A setting box pops up, press the  /  key to switch the state of the O.C.P between "ON" or "OFF", the O.C.P in current mode and status is enabled or disabled.

Note: In Plus-minus mode, the O.C.P status of Positive and Negative will remain consistent, you can set either of them. The O.C.P value can be set separately.



- 3 Use the numeric keys to enter the O.C.P value in current mode and status. The maximum in Independent, Series and Plus-minus mode is 3.15 A, the maximum in Parallel mode is 6.3 A. Press the  key to confirm.


3.4 Timing Output

The timing output function can preset up to 100 groups of timing parameters. When you turn on the timing output, the instrument will output the pre-specified voltage, current in pre-specified time.

You can set special O.V.P/O.C.P for timer status, see "*Over Voltage/Current Protection*" for more details.


3.4.1 Enter/Exit Timer Status


Press  to enter / exit timer status.

The  icon identifies the system is in timer status.

3.4.2 Timer Setting

Before turning on the timing output, you should set the timer parameters, including voltage, current and output time. This function allows up to 100 groups of timer parameters.

In timer status, press the  key to enter/exit timer setting interface of the current mode.

Press the  key to switch between the corresponding timer setting interface of the four working mode.

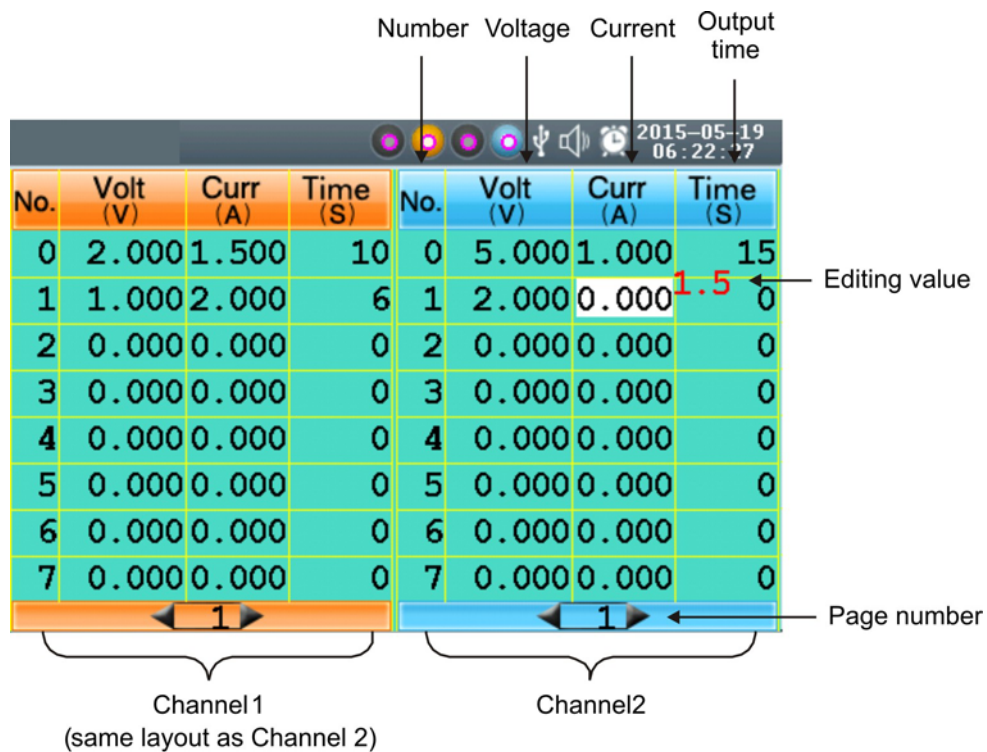







Figure 10. Timer Setting Interface in Independent Mode.


The selected parameter will be highlighted.

In Independent mode or Plus-minus mode, press  key to select the left parameter area, press  to select the right parameter area.

Press the  /  key to change the parameter item.

After selecting the parameter, use the numeric keys to enter a desired value, press the  key to confirm.

Press the  key to go to the previous or next setting page.

Note: If the input value exceeds the rating of current working mode, the system will change it to the maximum rating automatically after pressing the  key to confirm.

In the Plus-minus mode, the values of the Negative and Positive output time remain consistent, you can set either of them.



3.4.3 Timer Range

Timer range setting denotes that you can set the last number of timer parameter group and output mode. You can find out the **TimerRng** submenu of system menu only in timer status. If turn on the timing output, the system will output the pre-set parameters between 0 and the set number at sequence or loop mode.

1 In timer status:

Independent Mode




Press the  key, enter [**System** → **CH1 (CH2)** → **TimerRng**].

Parallel, Series Mode

Press the  key, enter [**System** → **TimerRng**].


Plus-minus Mode


Press the  key, enter [**System** → **Positive** → **TimerRng**].

2 The timer range setting box pops up. Use the numeric keys enter a number (0 ~ 99), press the  /  key to switch between **Sequence** and **Loop**, press the  key to confirm.


3.4.4 Turn On/Off Timing Output In timer status

▶ Independent Mode

Press  key to turn on/off the timing output of **Channel 1**.

Press  key to turn on/off the timing output of **Channel 2**.


▶ Parallel, Series or Plus-minus Mode

Press  key to turn on/off the timing output.


Note: In the process of timing output, closing the channel output will reset the timer; turning on the channel again will restart the timing output and the timer.












3.5 Save/Recall/Record











This instrument support operations with a USB flash device and local file storage, including: store, recall and delete current setting parameters. The current data of the channel can be recorded into a txt file, which stored in USB disk. You can connect the USB disk to the **USB Host interface**. After connecting the USB disk successfully, an icon  will be shown at the top of the screen.

3.6 Save System Parameters

In Normal Status, press the  key to save the parameters about current working mode and the output voltage/current, the O.V.P/O.C.P of current mode. You can name the setting files. This function is not available in Timer Status.


- 1 In Normal Status, press the  key to enter the function interface (press it again to exit). Press the  /  key to choose the storage location as "Local" or "UDisk". Turn the **knob** to change the selected character in "Save name" input box. Press the   key to add the next character. Press the   key to select the previous character. Press the  key to delete the selected character.
- 2 Press the  key to store after editing the file name.





3.6.1 Recall and Delete System Parameters File

- 1 Press the  key to enter the function interface (press it again to exit). Press the  /  key to choose the storage location. Press the  key to show the list of system parameters files.
- 2 The list displays the file name and stored date. Turn the **knob** or press the  /  key to select a file, and then press the  key.
- 3 Two options appear on the screen: "Load" and "Delete". Turn the **knob** or press the   key to switch between the options. Press the  key to confirm.



3.6.2 Record the Output


You have to insert a USB disk before using this function. By pressing the  key, the current data of the channel can be recorded into a txt file, which stored in USB disk.

- 1 Press the  key; press the numeric keys to set the interval.
- 2 Press the  key to start recording. During recording, an icon  is shown on the status bar.
- 3 Press the  key again to stop recording.



3.7 System Settings

You can set the system by operating the System Menu. It is suggested that you should read the "*System Menu Operation*" first, so as to be familiar with the menu operation.

3.7.1 Set Language



Press the  key and enter [**System** → **Language**], choose the desired language. The supported languages include: English and Spanish.

3.7.2 Set Bright

Press the  key and enter [**System** → **Display** → **Bright**]. Press the  key or turn the **knob** to adjust the screen brightness (1~10).







3.7.3 Set Screen Saver Time

The screen saver will run automatically if no operation is taken for any key within the set time. Press any key to resume.





Press the  key and enter [**System** → **Display** → **ScrSaver**]. Press the  key or turn the **knob** to adjust the screen saver time (1 ~ 99 minutes). When it is set to "00", the screen saver is disabled.




3.7.4 Set System Time

Press the  key and enter [**System** → **Sys Set** → **SysTime**]. Press the  /  key or turn the **knob** to set the selected value. Press the   key to move the cursor. Press the  key to confirm.



3.7.5 Buzzer

Press the  key and enter [**System** → **Sys Set** → **Buzzer**]. Press the  key to turn on/off the buzzer. When the buzzer is on, an icon  will be shown on the status bar. You will hear a key tone once a key is pressed down; when the system prompts the instrument will make a buzzing sound, e.g. cutting off the output due to O.V.P/O.C.P. When the buzzer is off, an icon  will be shown on the status bar.

3.7.6 View System Information

Press the  key and enter [**System** → **SysInfo**]. You can view the Serial Number, Software Version and Hardware Version.

3.7.7 Set as Default







Press the  key and choose [**System** → **Default**], press the  key to use the factory defaults. See table below.

Working mode		Independent		Parallel	Series	Plus-minus	
		CH1	CH2			Negative	Positive
Parameter							
Normal status	Voltage	5 V	5 V	12 V	15 V	12 V	12 V
	Current	0.5 A	0.5 A	1 A	1.5 A	0.5 A	0.5 A
	O.V.P value	5.5 V	5.5 V	12.5 V	15.5 V	12.5 V	12.5 V
	O.C.P value	0.6 A	0.6 A	1.1 A	1.6 A	0.6 A	0.6 A
	O.V.P/O.C.P status	OFF	OFF	OFF	OFF	OFF	OFF
Timer status	O.V.P value	15 V	15 V	12 V	24 V	12 V	12 V
	O.C.P value	1.5 A	1.5 A	1.5 A	1.5 A	0.5 A	0.5 A
	O.V.P/O.C.P status	OFF	OFF	OFF	OFF	OFF	OFF



Menu Item	Defaults
Brightness	9
Screen Saver	OFF
Buzzer	ON

3.8 Use Built-in Help

- 1 Press  function button, the catalog will display in the screen.
- 2 Press the  /  key or turn the **knob** to choose help topic.
- 3 Press the  key to view the details about the topic; press the  key to go back to the catalog.
- 4 Press  again to exit the help, or just do other operations.



4 COMMUNICATION WITH PC

FA-853 Power Supply supports communications with a PC through USB or COM interface. You can use the communication software to set the parameters, control the output of the power supply, and synchronously display the actual output values on the Power Supply screen.

1 Install the software

Install the communication software on the supplied CD.

2 Connect the instruments

Use a USB data cable to connect the **USB Device port** in the rear panel of the Power Supply to the USB port of a PC. Or use a data cable to connect the COM port in the rear panel of the Power Supply to the COM interface of a PC.

3 Install the driver

When the Power Supply is turned on, a dialog will appear on the PC screen and guide you to install the USB driver. The driver is in the "USBDRV" folder under the directory where the communication software is installed.

4 Use the software

Run the software; click the "Menu" button in the top right corner. Choose the "Communications → Ports-Settings" to set the corresponding communication parameters. After connect successfully, the connection information in the bottom right corner of the software will turn green. To learn about how to operate the software, you can choose "Communications → Help → Help" to open the help file.

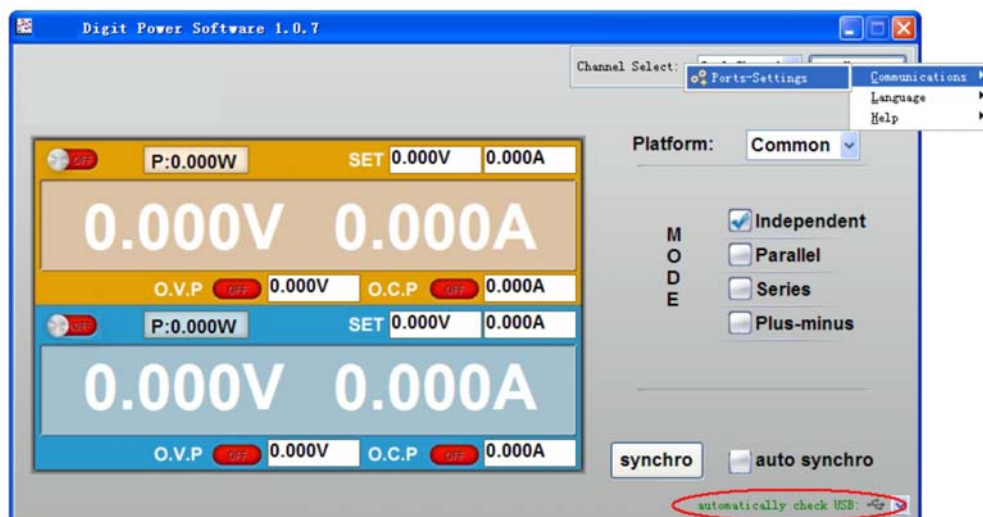


Figure 11. The Power Supply connects with PC successfully.



5 TROUBLESHOOTING

1**The instrument is powered on but no Display:**

- ▶ Check if the power is connected properly.
- ▶ Check if the Power Switch is in the proper voltage scale.
- ▶ Check if the fuse which is below the AC Power socket is used appropriately and in good condition (the cover can be pried open with a straight screwdriver).
- ▶ Restart the instrument after the steps above.
- ▶ If the problem still exists, please contact PROMAX for our service.

2**The output is abnormal:**

- ▶ Check if the output voltage is set to 0 V. If so, set it to other value.
- ▶ Check if the output current is set to 0 A. If so, set it to other value.
- ▶ When in timer status, check if there is any voltage/current value of timer setting is set to 0. If so, set it to other value.
- ▶ If the problem still exists, please contact PROMAX for our service.

3**Cannot identify the USB device correctly:**

- ▶ Check if the USB device is in good condition.
- ▶ Check if the used USB device is a flash device, note a hard disk cannot be supported.
- ▶ Restart the instrument and insert your USB flash device again.
- ▶ If the problem still exists, please contact PROMAX for our service.



6 SPECIFICATIONS

The specifications below are based on the instrument having run for at least 30 minutes continuously under the specified operating temperature.

		Channel 1/Channel 2		Fixed 5V
DC Output Ratings	Voltage	Independent/Parallel	0 to 30 V	5 V
		Series	0 to 60 V	
		Plus-minus	30 V 30 V	
	Current	Independent/Series /Plus-minus	0 to 3 A	3 A
Parallel		0 to 6 A		
Line Regulation	CV	$\leq 0.01\% + 3 \text{ mV}$		$\leq 3 \text{ mV}$
	CC	$\leq 0.1\% + 3 \text{ mA}$		
Load Regulation	CV	$\leq 0.01\% + 3 \text{ mV}$		$\leq 0.1\% + 3 \text{ mV}$
	CC	$\leq 0.2\% + 3 \text{ mA}$		
Noise and Ripple (20 Hz to 7 MHz)	CV	$\leq 300 \mu\text{Vrms} / 2 \text{ mVpp}$		$\leq 300 \mu\text{Vrms} / 2 \text{ mVpp}$
	CC	$\leq 3 \text{ mArms}$		
Settings Resolution	Voltage	1 mV		None
	Current	1 mA		None
Settings Accuracy (25 ± 5 °C)	Voltage	$\leq 0.05\% + 3 \text{ mV}$		None
	Current	$\leq 0.1\% + 3 \text{ mA}$		None
Read Back Resolution	Voltage	1 mV (10 V) 10 mV ($\geq 10 \text{ V}$)		None
	Current	1 mA		None
Read Back Accuracy (25 ± 5 °C)	Voltage	$\leq 0.05\% + 3 \text{ digits}$		None
	Current	$\leq 0.1\% + 3 \text{ digits}$		None



Display		
Display Type	3.9 inch colored LCD (Liquid Crystal Display)	
Display Resolution	480 (Horizontal) × 320 (Vertical) Pixels	
Display Colors	65536 colors, TFT screen	
Power		
Supply	110 Vac ± 10%, 220 Vac ± 10%; AC input 50/60 Hz	
Fuse	110 V	125 V-F5A
	220 V	250 V-F3A
Environment		
Temperature	Working temperature: 0 °C 40 °C	
	Storage temperature: -20 °C 60 °C	
Relative Humidity	≤ 90%	
Height	Operating: 3,000 m	
	Non-operating: 15,000 m	
Cooling Method	Fan cooling	
Mechanical Specifications		
Dimension	298 mm × 202 mm × 450 mm (W*H*D)	
Weight	About 9.8 kg	

Note: Equipment specifications are set in these environmental operating conditions. Operation outside these specifications are also possible. Please check with us if you have specific requirements.

RECOMMENDATIONS ABOUT THE PACKING

It is recommended to keep all the packing material in order to return the equipment, if necessary, to the Technical Service.



7 MAINTENANCE

7.1 **Instructions for returning by mail**

Instruments returned for repair or calibration, either within or out of the warranty period, should be sent with the following information: Name of the Company, name of the contact person, address, telephone number, receipt (in the case of coverage under warranty) and a description of the problem or the service required.

7.2 **Cleaning Recommendations**

CAUTION: To clean the cover, take care the instrument is disconnected.

CAUTION: Do not use scented hydrocarbons or chlorized solvents. The cover should be cleaned by means of a light solution of detergent and water applied with a soft cloth. Dry thoroughly before using the system again.

CAUTION: Do not use for the cleaning alcohol or its derivatives, these products can attack the mechanical properties of the materials and diminish their useful time of life.



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