


IT9000 Control Software PV8600 User Manual



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A NOTE sign denotes important hint. It calls attention to tips or supplementary information that is essential for users to refer to.



IT9000 User Manual

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Chapter1 Brief Introduction

1.1 Software Introduction

IT9000-PV8600 is a kind of easy-to-use and practicable control software designed by Itech Electronics Co., Ltd. It is applicable to Itech IT8600 Series electronic loads. With this software, you can take all operations for load front panel via computer control and enjoy great convenience in remote control. This software supports RS232, USB, GPIB and Ethernet serial port communication.

1.2 IT9000 Interface Introduction

After run IT9000, the software will initialize, in about 2 seconds, the below interface will appear:

110000										- 0 X
A Config	Data Satting	Save Data	ay Jata Query	Langeage	• 🚰 About	👷 Init				
	-									
	ł									

The interface is described as follows:

🚌 IT9000			
Config 😡 Data Setting	💓 Save Data 🥡 Data Query	Language 👻 🚰 About	👧 Exit

Config

Configuration function, to configure hardware information for control load device of IT9000 software control, including load device alias, device interface and interface parameter, and to configure sub-devices (e.g., channels) for each device.

• Date Setting

Data setting, mainly to select numeric field to be saved, device alias and save interval before data saving.

• Save Date

Data saving, mainly to save current test data. Before data saving, please set data at first.

• Date Query

Data query, to open the data file saved before.

• Language

To select software language version, including Simplified Chinese, Chinese-traditional and English.



Brief Introduction

• About

To list related information of software, including Company website.

• Exit To exit IT9000 software.



Chapter2 Basic Operation

2.1 Hardware Configuration

2.1.1 Function Introduction

The hardware configuration interface of IT9000 software is as shown below.

На	ardware Config							×
Γ	PV8600							
	DeviceAlias	DeviceInterface	InterfaceParamter	ChannelNumber	Series	Parallel	Synchronization	A
	PV8600_1	RS232 💌	ASRL1::INSTR, 960	1				
		Dev	ice bar					
					Тоо	l bar		
	•			III				Þ
	Add	Delete Serie:	s/Parallel/Sync Conf:	ig			01	K

- The "Device bar" includes settings for device alias, device interface, interface parameter and channel number:
 - Device Alias: the alias of a device, used to distinguish devices of same model.
 - Device Interface: drop-down options include RS232, GPIB, USB and Ethernet.
 - Interface Parameter: the interface parameter corresponding to device interface.
 - Channel Number: to set the channel number of sub-device.
 - Series: to display series configuration name in series connection of devices.
 - Parallel: to display parallel configuration name in parallel connection of devices.
 - Synchronization: to display synchronization configuration name in synchronization of devices.
 - Address: to set load communication address (used for devices with frame format protocol).
- Main toolbar functions:
 - Add: to add hardware device.
 - Delete: to delete specific device.
 - Series/Parallel/sync Config
 - OK: to confirm hardware configuration information.

2.1.2 Configuring Hardware

This function enables the user to create new hardware information or modify existing hardware device information. Detailed operation steps will be given



Basic Operation

below taking creation of new device information as example.

Operation steps

- 1. Run IT9000 software and click "Configure" icon.
- 2. Click "Add" button in the Configuration Interface and display the currently added hardware device information and default parameter of device in the "Device bar" at top. As shown below.

На	ardware Config							×
	PV8600							
	DeviceAlias	DeviceInterface	InterfaceParamter	ChannelNumber	Series	Parallel	Synchronization	A
	PV8600_1	RS232 💌	ASRL1 : : INSTR, 960	1				
	•							Þ
	Add	Delete Serie	s/Parallel/Sync Conf	ig			0	ĸ

To change default parameter of hardware device (e.g., device interface, interface parameter and channel number), you may click the parameter for change.

- 3. Device Alias: double click to edit device alias.
- 4. Device Interface: to select from the drop-down box.
- 5. Interface Parameter: double click to configure in the Configure Dialog. For details, refer to Section 2.1.3 "Communication Interfaces of Configuration Device".
- 6. Channel Number: set the channel number of sub-device. The channel number is changeable.
- 7. Click "OK" to save the configuration information of current hardware device. At this time, the device name (device alias @ channel number) will be displayed at top left of the interface. To pop up the Control Interface, you need to double click the Device Name.

🚃 IT9000		
Sconfig 🔊 Data Setting	💓 Save Data 🦓 Data Query	🔁 Language 👻 🚰 About 👷 Exit
PV8600_101		

2.1.3 Configuring Interface of Device

IT9000 software is installed in PC and interacts with matching hardware devices via different communication interfaces. This software supports interfaces like USB, RS232, GPIB and Ethernet interface. When configuring the hardware device, configure different interface types based on actual needs and set corresponding interface parameters for different interfaces.

Operation steps

 Select the device interface corresponding to the hardware device to be edited from the Hardware Configuration Interface, and select the interface type from the drop-down list.



Basic Operation

DeviceInterfac	e
RS232	-
RS232	
USB	
GPIB	
Ethernet	

- 2. After selecting the device interface, double click corresponding "Interface Parameter" column. The system will pop up "Interface Configuration" window.
 - RS232 Interface Parameter Configuration

Interface Config	X
B S232	
ComPort	
BaudRate	9600 👻
Parity Check	None 🔻
DataBits	8 🗸
StopBit	1
	OK Cancel

Serial interface: to select serial interface, i.e., the serial interface number occupied by RS232 communication cable interface.

Baud rate, parity check bit, data bits and stop bit must be configured consistently with those in menu setup.

• GPIB Interface Parameter Configuration

Interface Config	×
GPIB	
GPIB	
GPIBO::1::INSTR	
GPIBO::1::INSTR	
	UK Cancel

During GPIB communication of load device, the address setting range is: 1-30.

• USB Interface Parameter Configuration



Basic Operation

Interface	Config					×
USB						
USB						
USBO::0	xFFFF::0	xFFFF:::	6025360	010716	5830015	-
USB0::0	xFFFF::0	xFFFF::6	5025360	010716	5830015	:::1
			OK		Cancel	

• LAN Interface Parameter Configuration

If LAN interface is used for communication, both computers and device are connected via HUB (or, the device and computer are directly connected via cross network cable). The computer and device IP setting should be in a same network segment.

Interface Config	
Ethernet	
IP Address	192. 168. 0. 1
	8000
Port	5000
1	OK Cancel

3. After interface parameter configuration, click "OK". Finish interface parameter configuration.

2.1.4 Synchronization Configuration

This configuration is used for multi-connection. For synchronized devices, when the voltage/current parameters and working mode of one device is set, the other devices will be automatically set in the same way.

1. Follow the above steps to configure and connect 2 sets of IT8600 devices.

DEVICERITAS	DeviceInterface	InterfaceParamter	ChannelNumber	Series	Parallel	Synchronization
PV0600_0	RS232 •	ASRLI :: INSIR, 960	1			

2. Click "Series/Parallel/Synchronization" button and click "Synchronization"



Basic Operation

in the figure below.

Series/Parallel/Sync Config	— ×
X Series	Add
Synchronization	Edit
	Delete
	Cancel

3. Click "Add" button to create Synchronization.

Create Synchronizatio
Alias
Device List
PV8600_1@1 PV8600_2@1
All OK Cancel

4. Name alias: IT8600_2. Click the box at front of PV8600_1 and PV8600_2 and select the devices for Synchronization.

Create S	ynchronizatio 🔀
Alias	IT8600_2
Device	List
V8 🔽	600_1@1
V IVC	600_2@1
📝 All	OK Cancel

5. Click "OK" button. The Synchronization Configuration Interface will display configured device.



Basic Operation

Series/Parallel/Sync Config	—
Series Parallel Conchronization PV8600_2 PV8600_201 PV8600_201	Add Edit Delete OK Cancel

6. Click "OK" to save the current Synchronization configuration information. At this time, the Synchronization configuration name "IT8600_2" will be displayed at the left top of the interface.

DER 1T9000					
X Config 🔬 Data Settin	; 💓 Save Data	Data Query	Language	- 🚰 About	👧 Exit
X IT8600_2					

7. Double click IT8600_2 to display the Synchronization Control Interface.



Note

For synchronization of IT8600 Series, please note that synchronization operation is only applicable to devices with same model and status.



Basic Operation

2.2 Data Setting and Saving

IT9000 can save test data. Before data saving, select the data field to be saved. Select the device alias for saving and the save interval.

Operation steps

1. After device hardware configuration is finished, double click the device name (device alias @ channel number) displayed at top left of the interface. At this time, Device Control Interface will be displayed. As shown below.

119000				- 2 ::
A Config 5 Data Sett	ing 💓 Suve Data 🧠 Data Query 📜 Lui	rours - 🚰 About 🧖 Ixit		
PV8600_181	190600_181 ×			
	of Dalane of Offline Description	rtert 💭 Setup 😰 Matar 🎧 Secus 🚺 Ma	Hait.	
	P 0,000 V	s + 0,000 va	• 0,000 var	Pass + 0,0 v
	Ide	Izaz * 0.000 A	2ax * 0,000 A	Ipk+ + 0,000 A
	Ipk- 0,000 A	Vdc * 0,000 v	Uras * 0,000 v	Unax * 0,00 v
	κ • θ,θ Ω	Fzeq * 0,0 Hz	ez + 0,000	PF + 0.000
	Uthd * 0,0	Time 🕈 🔒 S		
	1			
	CC CR CP CV	ISet 0.00A CP 0.000 P7	0.000 T0st 0.00s	
	NO Input On			
	DC Input Off	FE		OV. LDF

2. Click "Data Setting" icon to enter the Data Setting Interface.

Select Save Data Field	ł				×
DeviceAlias PV8600_101	Data Field	All	Sav	e Field	A11
			Add		
SaveInterval 1000	mS		Delete	Save Data	Cancel

3. Click the alias of the device requiring data saving.



Basic Operation

Select Save Data Field					×
DeviceAlias	Data Field	All	1	Save Field	🔲 All
PV8600_1@1	P S Q Pmax Idc Irms Imax IpkAdd IpkSub Vdc Vrms Vmax R Freq CF PF Vthd Time		Add Delete		
SaveInterval 1000	🚖 mS			Save Data	Cancel

4. In "Data Field" bar, check the box at front of Data Field (P, S, Q), and click "Add" button to enter the "Save Field" bar.

Select Save Data Field	d				— ×
Select Save Data Field DeviceAlias PV8600_101	Data Field Data Field P S Fmax Idc Irms Imax IpkAdd IpkSub Udc Urms Umax R	A11		Save Field PV8600_101: PV8600_101: PV8600_101:	• All : P : S : Q
SaveInterval 1000	Freq CF FF Uthd Time		Add Delete	Save Dat	a Cancel

You may also click the Field Name in the Save Field bar. Click "Delete" button to delete the saved field.

- 5. Set "Save Interval".
- 6. Click "Save Data" button to save data setting.
- 7. In the Control Interface, click icon to appear the interface as shown below. You need to input Save File Name.

Input Table Name 🛛
Table Name Table2016_10_08_14_41_33
OK Cancel

8. Click "OK" button in the figure above to start data save. Then, the icon will



Basic Operation

change to Stop Save, and "Data Setting" and "Data Query" will be grayed out. Click Stop Save icon to stop saving.

2.3 Data Query

IT9000 software provides query function for measured data. You can query measured data at different periods of time and export and save these measured data.

Operation steps

1. Click icon to enter the Data Query Interface.

Data Query		-X -
Table Name Table2016_11_24_14_43_ Table2016_11_24_14_44_	DataList	
		Delete Export Cancel

2. In Data Query Interface, select and click the "Table Name" of data saving, and the test data will be displayed in the data list. As shown below.

Data Query							—X —
Table Name	DataLi	st					
Table2016 11 24 14 43		Id	PV8600_1_1P	PV8600_1_1S	PV8600_1_1Q	*	
	•	1	0003	0	0		
		2	0003	0	0		
		3	0002	0	0	-	
		4	0003	0	0		
		5	0003	0	0	Ε	
		6	0004	0	0		
		7	0004	0	0	-	
		8	0004	0	0		
		9	0003	0	0		
		10	0003	0	0		Delete
		11	0004	0	0		
		12	0004	0	0	-	Export
	•				F		Cancel

- Delete: to delete the data in current data list.
- Export: Click Export to export the data in current data list to EXCEL table. Saving path is optional.
- Cancel: to exit the Data Query Interface.



Chapter3 PV8600 Control Interface

3.1 Introduction of Control Interface

The PV8600 Control Interface of IT9000 software is as shown below.



- 1. Tab bar, to switch the display of Control Interfaces of different devices.
- 2. Toolbar, main functions include:

Online: remote control, to set the load to Remote Control mode.

Offline: local switch, to return the load back to Local Mode from Remote Mode.

Clear Protect: to clear load protection status.

Setup: set-up function tab.

Meter: measurement function tab.

Scope: wave function tab.

Harmonic: harmonic function tab.

List: list function tab.

Setup Phase: to select phase A, B, C or ABC. You can set ABC phase only in three-phase balance mode.

View Phase: to select the phase A, B or C to display.

3. Display real-time value.



Control Interface

- 4. Display constant operation mode of load (constant current (CC), constant resistance (CR), constant power (CP) and constant voltage (CV)).
- 5. Setting values of (constant current ISet), peak factor (CF), power factor (PF), time to load (TOut) under load working mode.
- 6. Load working mode: AC mode /DC mode.
- 7. Input status: On/ Off
- 8. Three-phase balance status: Balance/ Unbalance.
- 9. Display load status: frequency failure (FE), under-voltage protection (UV), over-current peak protection (OCPP), over-current protection (OCP), over-power protection (OP), over-temperature (OT), over-voltage protection (OV), load failure (LDF).

3.2 Setting Function

Click "Setup" tab to perform system and protection settings.

System setup

Setting			× ľ
System Setup	Protect Set		-
CF/PF Setting	💿 вотн	CF/PF Prio	rity
<u> </u>			
-Timing Mode-		-Peak Hold	Mode
) Off	🔘 On	Off	🔘 0n
-Power On Sett:	ing	Ext Port	
RST	🔘 SAVO	Off	🔘 0n
-Average Count((2^N)		
16	-		
			ОК

Character	Function description
CF/PF setting	CF/PF setting options include: CF mode, PF mode and BOTH mode. When BOTH is selected, you need to set the CF/PF
	priority.
CF/PF Priority	Set the CF/PF priority。
Timing Mode	Set the timing mode: off/on。
Peak Hold Mode	Set the peak holding mode: off/on。
Power On	Set the Power-on status: SAV0/RST
Setting	If Rst is selected, factory settings are recovered after each
	start-up. If Sav0 is selected, the voltage and current are the
	values in the file FILE0.
Ext port	Set the ext port: off/on。



Control Interface

Charact	er	Function description
Average (2^n)	Count	Set the average times (1-16)。

Protection setup

Setting			
System Setup	Protect Se	t	-
-OCP (Current R	ums Protect) —		
State	Off 🔻	Level (A) 20.00	Delay(s) 10.00
-OCPP (Current	Peak Protect))	
Level (A)	60.00		
-OPP(Power Pro	tect)		
State	Off 🔻	Level(W) 1800.00	Delay(s) 10.00
Pmax (W)	1800.00		
			OK

Character	Function description					
OCP (current RMS	Set over-current protection (OCP).					
protect)	Status: Enable/disable protection					
	Level (A): Current at the time of OCP					
	Delay (s): Over-current time. When this delay time value is exceeded, protection occurs.					
OCPP (current peak	Set over-current peak protection (OCPP)					
protect)	Level (A): Peak current when protection occurs					
OPP (power protect)	Set over-power protection (OPP).					
	Status: Enable/disable protection					
	Level (A): Power when OPP occurs.					
	Delay (s): Over-current time. When this delay time value is exceeded, protection occurs. Maximum power (W): Set maximum power.					

3.3 Measurement Functions

Click "Measure" tab to display Measurement function interface.



onfiq 🚡 Bata Setting 🎯 Save Data 🧠 Data Query 🏅 🚰 About 👧 Es 6 888 Lis Ide Ipk CR CP Iset 20.00A CF 1.414 PF 1.000 LDF

Parameter Measurement

Parameter	Description	Parameter	Description
Р	Active power [W]	Udc	Average voltage [V]
S	Apparent power [VA]	Urms	Voltage effective value [V]
Q	Reactive power [var]	Umax	Maximum voltage
Pmax	Maximum power	R	Resistance
ldc	Average current	Freq	Frequency
Irms	Current effective value [A]	CF	Crest factor
Imax	Maximum current	PF	Power factor
lpk+	Positive current peak value [A]	Uthd	Voltage total harmonic distortion
lpk-	Negative current peak value [A]	Time	When Timing mode is enabled, the timer starts to count time after the load state is ON. When Timing Mode is Off, Time has been 0.

3.4 Oscilloscope function Click "Wave" tab to display Oscilloscope function interface.

Control Interface



Control Interface

125		• 🔞 Clearfreiten 🍘 Se	tsp 🛅 Anter 😫	Berpe 🎁 Harmonie	List		
10		10.04/		0.012	1082/	Curve Visible	(5.1k
0,	0007	0,000		0.000mA	0,00084	Trig Source	
						 # V	04
11						Trig Hede	(C) Norm
11						Tric Slave	- Vinan
11						@ FOG @ REG	O AR
11						W Sange	
11						[100V	
						I Range	
						TOX	-
						10mm	
						Enob Set	
						0.1	0.4
1						C T/Lev	C 1/2+
11						1	
11							
11							
11						0.000	
							1
							11

Curve Visible: select wave, voltage (U) and current (A) displayed on the interface.

Trig Source: select trigger source, voltage signal and current signal.

Trig Mode: select trigger mode: Auto or Normal.

Trig Slope: select trigger slope: Positive, Negative or Any.

U Range: set voltage range of each grid.

I range: set current range of each grid.

T/Div: horizontal (time/scale) setting.

Knob set: set parameters that can be adjusted by knob. Rotate the knob to change corresponding value of the parameter in the parameter. Use Knob to adjust the four parameters below:

- U: voltage benchmark.
- A: current benchmark.
- T/Lev: trigger level.
- T/Del: trigger delay.

Run: Select this button to run Wave status.

Stop: Select this button to stop Wave status running.

Single: Single measurement button: when single measurement is enabled in the Stop status, the stop status is enabled again after one measurement based on the current data updating rate. When single measurement is enabled in the Run status, the instrument immediately restarts one measurement and then enters the Stop status.

Auto: Automatic adjustment button, the input signal of the power meter will be calibrated automatically to display the best effects of input signals.

3.5 harmonic function

Click "Harmonic" tab to display Harmonic function interface.



Control Interface

00_191	F¥3600_181 ×								
	DaLike 🍎 Offline 🔟 ClearTrate	ci 💭 Satup 📔 Mater 🌄 Scipe 🛅 Karanilit 🎆 List							
1-	THD Formal Sr ® Sr	0,000 ×r Uras * 0,000 V	 2						
	100								
	80								
04	60								
	40								
	20-								
	0-1	19	39						
	• Order VOLT	4 (XE)	FHAS						
	0.00	0.00	0.00						
	: 0.00	0.00	0.00						
	2 0.00	0.00	0.00						
	3 0.00	0.00	0.00						
~	5 000	0.00	0.00						
(4)	6 0.00	0.00	0.00						
0.	T 0.00	0.00	0.00						
	0 0.00	0.00	0.00						
	9 0.00	0.00	0.00						
	10 0.00	0.00	0.00						
	11 0.00	0.00	0.00						
	and the second sec								

1. THD formula: Distortion factor calculation formula.

%r: using all harmonic measurement data from the minimum harmonic order (0^{th}) to the maximum harmonic order (within the upper limit of analysis orders) as the denominator.

%f: using the data of fundamental wave (1-order) components as the denominator.

- 2. Harmonic measurement parameter: Uthd/Urms.
- 3. Harmonic bar chart: display percentage of each harmonic.
- 4. **Harmonic list:** display voltage, phase and voltage harmonic distortion factor (UTHD) of each harmonic.



3.6 List function

IT9000-PV8600 has the list function. You can edit the List file based on actual requirement, making the instrument to realize complicated load change.

Click "List" tab to display List function interface.



Add/Insert/Delete: to add/insert/delete one step.

Import: to import the list file into the software from computer. The user can edit list file in Excel and save as *.csv format, then import into the software.

Export: to export the list file into computer. The user can export the list file to computer after editing. The exported file is saved as *.csv format.

RunTimes: to edit the cycles of the list file.

Run: to run the list file.



Control Interface

3.7 Three-phase setup

You can set the three-phase parameters on the IT9000-PV8600 software interface only if the connected instrument has three-phase function.

TT9000											-	e 🛛
🤌 Config 🚡 Bata Satting	5 💓 Sara 1	Data 🧠 Data G	bary 🔁 Langeage	- 🚰 Ab ca	at 🧙 Ezit							
py0600_191	193600_181	×										*
	(OnLine	Contains .	Clear Protect	Setup	🖹 Itter	5cope (Harmonie 🎆 List	Setup Phase	* View Phase	•		
	P	* 0,0	00 *	s	•	0,000	A Q	1 0,0	00 var	Pnax	+	. 0 •
	Idc	* 0,0	00 *	Izas	•	0,000 *	Inax	1 0,0	00 -	Ipk+	* 0.01	A 🕄
	Ipk-	· 0,0	00 ^	Udc	•	0,000 v	Urns	1 0,0	00 v	Unax	· 0,0	10 V
	R	•	0.0 Ω	Freq	•	0.0 B	x CP	1 0,0	00	PP	* 0,0	0
	Uthd	•	0.0	Time	•	0.0 s						
	CC	CR CP	CV ISet	AIII A	CF	0.000	27 0.000	TOut 0.1:				
	Beter .					_						-
		Ing	ut On		Bala	ince 📔	FE UV 0	OCPP 0CP	OP 🚺 OT	OV L	DF	
	IC IC	Ing Ing	UL OIT		UnBe	lance						

Setup Phase: to select phase A, B, C or ABC. You can set ABC phase only in three-phase balance mode.

View Phase: to select the phase A, B or C to display.

Three-phase balance status: Balance/ Unbalance.

Contact US

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- 2. Visit ITECH website www.itechate.com.
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