

**ZX3030B AC/DC Three
Phase Standard Power Source**





Attention

1. This device is a high precision electronic equipment, it must be carried lightly during transportation and use.
2. In order to ensure the precision of output and measurement, the equipment should be preheated for 30 minutes after turning on.
3. The power supply of the device is AC220V / 50Hz. Do not connect the DC or other power supply to the input end of the power supply.
4. Connect correctly to ensure that voltage output is not short-circuited and current output is not open.
5. Do not enter the parameter calibration interface for non-professional personnel to carry out calibration operation.
6. When the installation is abnormal, contact the manufacturer in time, please do not repair it without authorization.
7. All unauthorized private demolitions will be deemed to be waivers of warranty rights.



Safe use

1. The device must use a power outlet with protective grounding to prevent static electricity from being induced by the fuselage during the operation of the device.
2. It is prohibited to access an external voltage or current signal to the signal output of the device.
3. It is prohibited to access signals beyond the measurement range to the signal measure end of the device.
4. It is prohibited to connect any connection plugs to the ground end of the front panel.
5. When disconnecting the cable, always disconnect the power supply first.
6. When the output voltage is more than 36V, attention should be paid to safety to prevent the occurrence of electric shock accident.
7. When the device is output, no live plug and pull output signal line.
8. Before the device communicates with the PC, it should disconnect the power supply of the device and then connect again to avoid causing damage to the device.
10. To ensure the normal operation of the installation, do not clog or seal the ventilation and cooling system of the installation.
11. When cleaning the body, the power should be disconnected and then cleaned carefully with a cleaner or wet cloth.
12. Do not operate the device in environment of wet or condensed water.
13. The installation shall be stored in an outer packing box after it has been used.



Although the device has overload, overheating and other protection measures, but serious wrong wiring can still lead to equipment damage!

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I、 Introduction

ZX3030B AC/DC Three Phase Standard Power Source is one of the series of high precision multifunction standard power supply [source meter integrated portable calibration device] developed by **GDZX**. The core technology of the device is ARM and FPGA, high speed and high precision D / A converters and direct digital synthesis technology (DDS). High precision parameter standard is built in the product, which adopts analog closed-loop feedback and digital PID regulation to make output voltage, current, frequency, phase, power, power energy (option) for long-term and stable set up tracking.

The device has the characteristics of high precision, stable and reliable work, convenient and flexible operation and so on.

II、 Functions and characteristics

- The basic errors of various kinds of ammeter [watt-hour meter (option), voltmeter, ammeter, power meter, frequency meter, power factor meter, phase meter] can be checked. Voltage, current, waveform, power factor and other factors caused by the changes.
- The power supply part can generate the distortion wave with 2 ~ 32 order harmonics. The number of harmonics, frequency, the amplitude and the phase of harmonics to the fundamental wave can be programmed.
- Using high power precision operational amplifier, the working frequency band is 40HZ to 1kHz. It has good linearity. Having dual output protection, so that the output signal has the ability of high fidelity, high impact resistance.
- RS-232 interface and USB interface. The device controlled by PC can be used to check various instruments, and the results can be processed and managed.
- Adopt exquisite aluminum alloy chassis, beautiful appearance, light weight of the whole machine.

III、 Specification

AC output:

Output voltage and current:

- ▽ Output voltage range: 0 ~ 600V
- ▽ Rated voltage range: 25V, 50V, 100V, 200V, 400V, 600V
- ▽ Output current range: 0 ~ 24A
- ▽ Rated current range: 0.1A, 0.5A, 1A, 5A, 10A, 20A
- ▽ Operating voltage and current regulation range : 0 to 120%

- ▽ Operating voltage and current regulation fineness: 5×10^{-5}
- ▽ Voltage and current accuracy: The error is $\leq 0.03\%$ (reading) + 0.02% (full); Grade 0.05
- ▽ Voltage and current output power: The volume of each volume is 100%
Output power is no less than 20W

Output frequency:

- ▽ Frequency range: 45Hz ~ 65Hz
- ▽ Frequency resolution: 0.001Hz
- ▽ Accuracy: 0.01Hz

Output phase:

- ▽ Output range: $0.00^\circ \sim 359.99^\circ$
- ▽ Adjustable fineness: 0.01°
- ▽ Output accuracy: 0.1°

Output harmonics:

- ▽ Harmonics 2 to 21 times
- ▽ At a rate of 0 to 20%
- ▽ Each harmonic phase fineness $0.01^\circ \cdot N$ (N is the harmonic number)

Output power:

- ▽ Output power range: Arbitrary combination of rated voltage range and rated current range
- ▽ Output accuracy: Grade 0.05 accuracy in the range of rated power ranges
Reduction of reactive power accuracy by one level

Output waveform distortion:

- ▽ At the AC voltage and current output waveform distortion is $\leq 0.3\%$

Watt-hour meter measurement:

- ▽ Comprehensive difference: 0.05% FS (pulse output error $\leq 90\text{kHz}$; Three phase rated value = 60kHz)

DC output:

- ▽ DC voltage range : 75mV, 150mV, 300mV, 3V, 6V, 10V output capacity 100mA per file
75V, 150V, 300V, 500V, 1000V output capacity 40mA per file
- ▽ DC current range : 30uA, 300uA, 3mA, 30mA, maximum output capacity 9VA
300mA, 1, 5A, 20A, maximum output capacity of 10VA
- ▽ DC voltage and current adjustment range: 0 ~ 120% FS, adjustable fineness 5×10^{-5}
- ▽ DC voltage and current output stability: U: $\leq 0.01\%$ FS/100s, I: $\leq 0.02\%$ FS/100s
- ▽ DC voltage rating range accuracy: 300mV~1000V range
The error is $\leq 0.03\%$ (reading) + 0.02% (full); Grade 0.05
- ▽ DC current rating range accuracy: 300uA~1A range

The error is $\leq 0.03\%$ (reading) + 0.02% (full); Grade 0.05

▽75mV、150mV, the output voltage accuracy (greater ≥ 200 ohm load):

The error is $\leq 0.06\%$ (reading) + 0.04% (full); Grade 0.1

▽ current of 30uA, 5A, 20A) accuracy:

The error is $\leq 0.06\%$ (reading) + 0.04% (full); Grade 0.1

Other:

Working power: 220Vac + 10%, 50Hz + 5%.

Use environment: Temperature 20 - 10 Deg. C, relative humidity is $\leq 85\%$ RH

Volume weight: 460 X 480 x 200mm³, about 18kg

IV. Familiar with the device

Front Panel Features

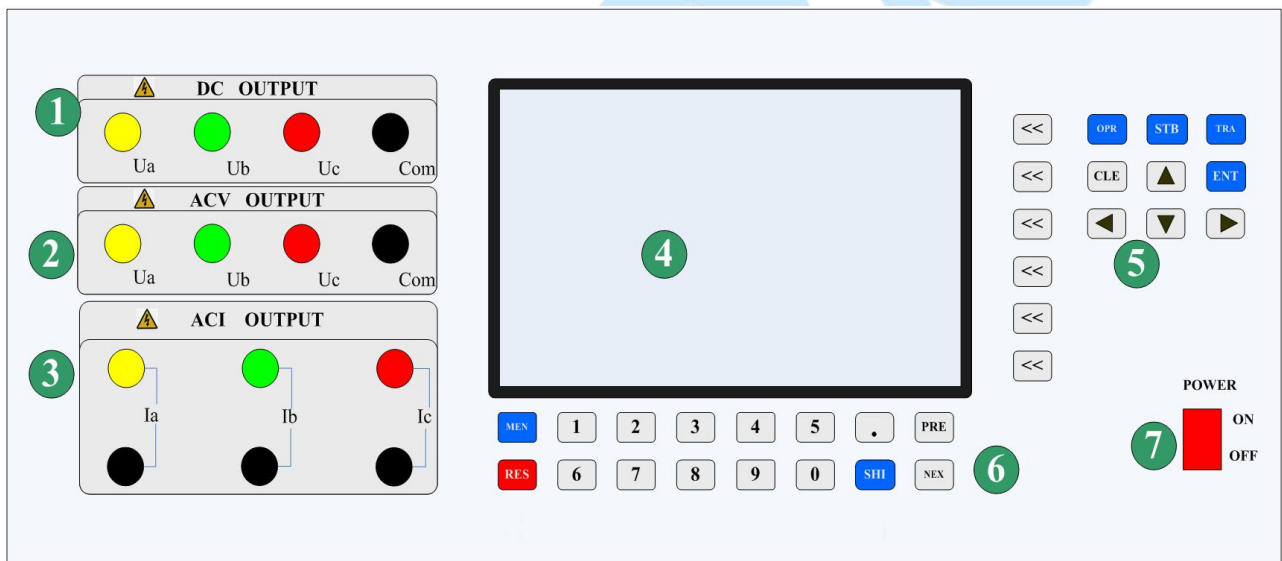


Figure 1

- (1) DC output terminal
- (2) AC voltage output terminal
- (3) AC current output terminal (need short connection when not working)
- (4) Display screen
- (5) Function selection key
- (6) Numeric key
- (7) Power switch

Rear Panel Features

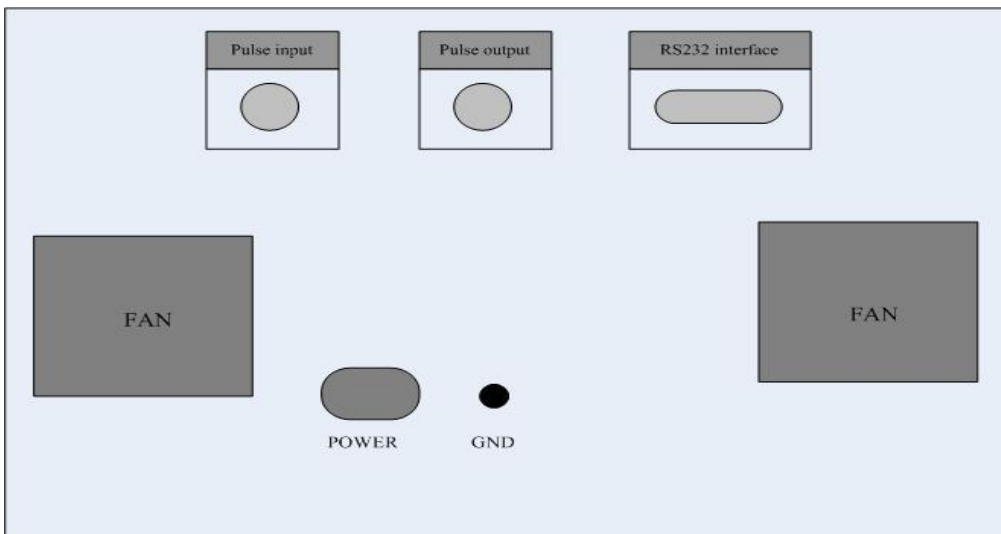
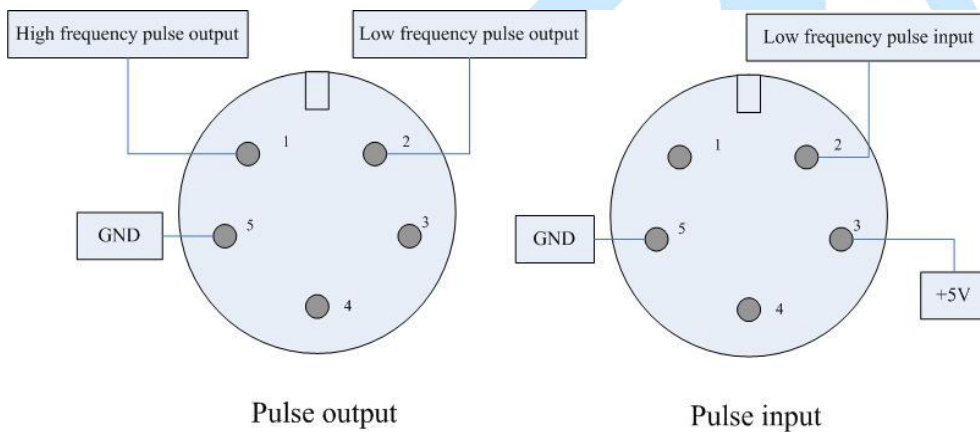


Figure 2

(1) Pulse input and output terminals for watt-hour meter calibration. See figure 3



(Figure 3)

Pulse Input:

GND: grounding

+5V: providing optoelectronic head power supply

FL: low frequency pulse input

Pulse Output:

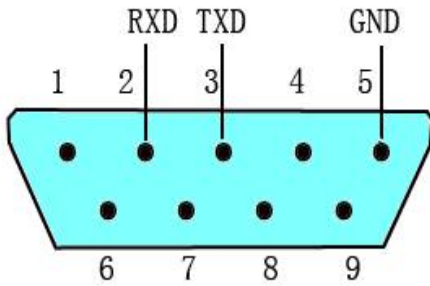
GND: grounding

FH: high frequency pulse output

FL: low frequency pulse output

(2). RS232 Interface

RS232 communication interface terminal.



(Figure 4)

(3). AC Power Input Module

(4). Ground Terminal

(5). Fan

V. Operation instructions

Attention

- * **Warm up electricity for at least 20 minutes before meter calibration. Turn it on at least 30 seconds after shutdown.**
- * **If a continuous beep is emitted while the installation is working, or the amplitude does not rise, the computer must be turned off for inspection.**
- * **The sequence of shutdown is to press the "disconnect" button before pressing the power switch.**
- * **When a three-phase two-element meter is calibrated, the common (black) end of the voltage of the B phase connection device of the meter is checked.**

Main menu

The main menu screen shown in fig. 5 appears after the LCD is turned on. According to the main menu prompt, press the number key on the right side of the LCD display to enter the corresponding submenu.



Figure 5: Main menu window

Ac output operation

In the main menu, press the AC **output key** to enter the AC Standard Source Operation interface, and on the right side of the AC Standard Source Operation interface, enter the AC Source output setting through [\ll] key.

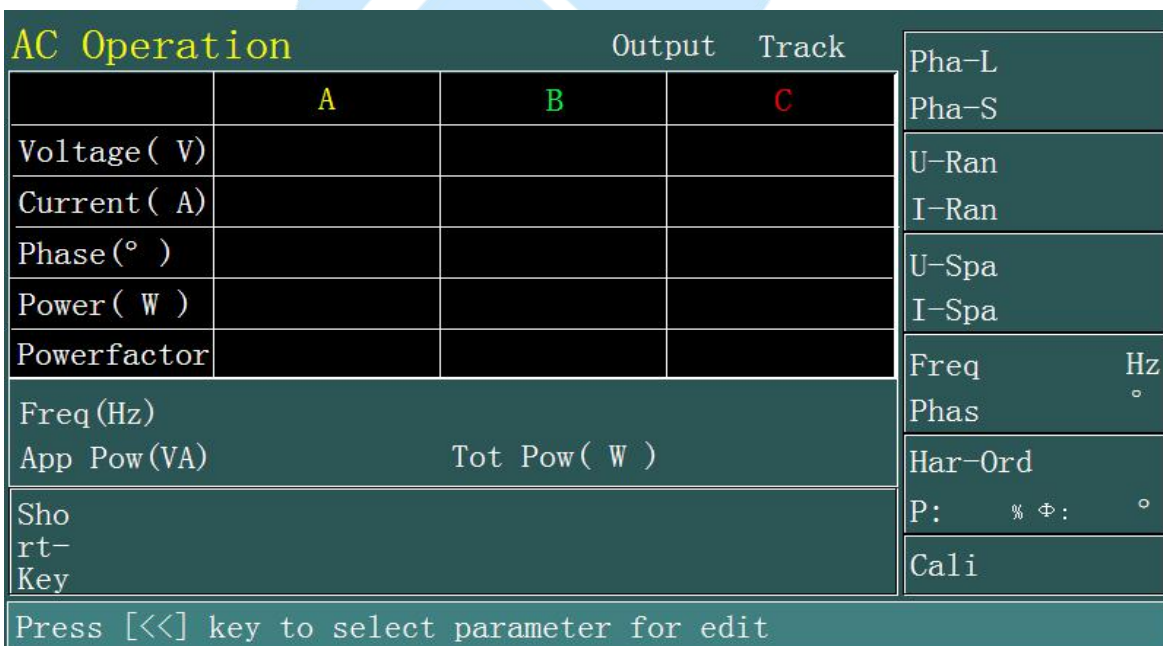


Figure 6: Ac operation window

The middle part of the diagram shows the voltage, current, power, power factor and frequency values measured by the built-in standard. The lower half is used for shortcut key settings.

- **Phase line setting:** press the corresponding [**< <**] key, three-phase four-wire in the highlight state, through the top and bottom keys change to three-phase three-line, press [**confirm**] key to execute.
- **Phase sequence setting:** when you press the [**< <**] key once, ABC is highlighted, and the input is changed by the up and down key, Get out of the way. ABC represents three-phase voltage and current.
- **Voltage and current range settings:** press the corresponding [**< <**] key, voltage range 100V highlight, change the range through the next key, press [**confirm**] key. Press [**< <**] again to enter the current path setting. The operation way is the same.
- **Definition of voltage range shortcut key:** directly select range 1: 25V, 2: 50V, 3: 100V, 4: 200V, 5: 400V, 6: 600V through digital key.
- **Definition of the current range shortcut:** directly select the range 1: 0.1A, 2: 0.5A, 3: 1A, 4: 5A, 5: 10A, and 6: 20A through the digital key.
- **Voltage and current amplitude adjustment:** press the corresponding key [**< <**], the voltage amplitude is 0%, highlighting, changing the setting fineness by moving the cursor on the left and right keys, changing the magnitude through the up and down key, and setting the amplitude through the [**output key**]. Press [**< <**] again to enter the current path setting
- **Definition of voltage current amplitude shortcut key:** 1:10%, 2:20%, 3:30%, 4:40%, 5:50%, 6:60%, 7:70%, 8:80%, 9:90%, 0:100%
- **Frequency and phase adjustment:** the method is the same as the voltage and current amplitude adjustment.
- **Frequency shortcut key :** 1: 50Hz、 2: 45Hz、 3: 48Hz、 4: 49Hz、 5: 51 Hz、 6: 52 Hz、 7: 55 Hz、 8: 60 Hz、 9: 65 Hz、 0: 75 Hz
- **Phase shortcut key :** 1: 30、 2: 60、 3: 90、 4: 120、 5: 150、 6: 180、 7: 270、 8: 300、 9: 330、 0: 0
- **[Tracking] key description:** there is a tracking indicator on the screen, open tracking, voltage, current amplitude will automatically adjust to the set value. For example: set 100.000V, range 100V, signal output 100%. Tracking closed, display 98.976%, open tracking, signal automatically adjust to display 100.000%.

Electric energy error detection

In the main menu, press the corresponding [\leftarrow] key on the right to enter the Power error Detection interface.

Electric Energy					Output	Track
	A	B	C			
Volatge (V)					Pha-L	
Current (A)					Pha-S	
Phase (°)					U-Ran	
Power (W)					I-Ran	
Tot-Pow (W)	Fre (Hz)				U-Spa	
R-Num	S-Num	S-Pul			I-Spa	
Err=	%	Pre=	%	S=	Freq	
					Hz	
					Phas	
					Constant	
					Set-Num	
注:						

Figure 7: Power operation window

On the right side of the electric energy error detection interface is the power error output setting. The setting is entered through the [\leftarrow] key. The middle section of the figure shows the voltage, current, phase, power, frequency, total power, cycle to count sampling pulse, Err (error), Pre(last error), Samps (cumulative number of cycles), and S values measured by the built-in standard. The lower half is used for shortcut key settings.

The setting of the power error detection operation area is the same as that of the AC output operation area.

Output low frequency power constant:

Measuri ng range	50V	100V	200V	400V
0.1A	720000	360000	180000	90000
0.5A	144000	72000	36000	18000
1A	72000	36000	18000	9000
5A	14400	7200	3600	1800
10A	7200	3600	1800	900
20A	3600	1800	900	450

High frequency power constant times 20000

DC output operation

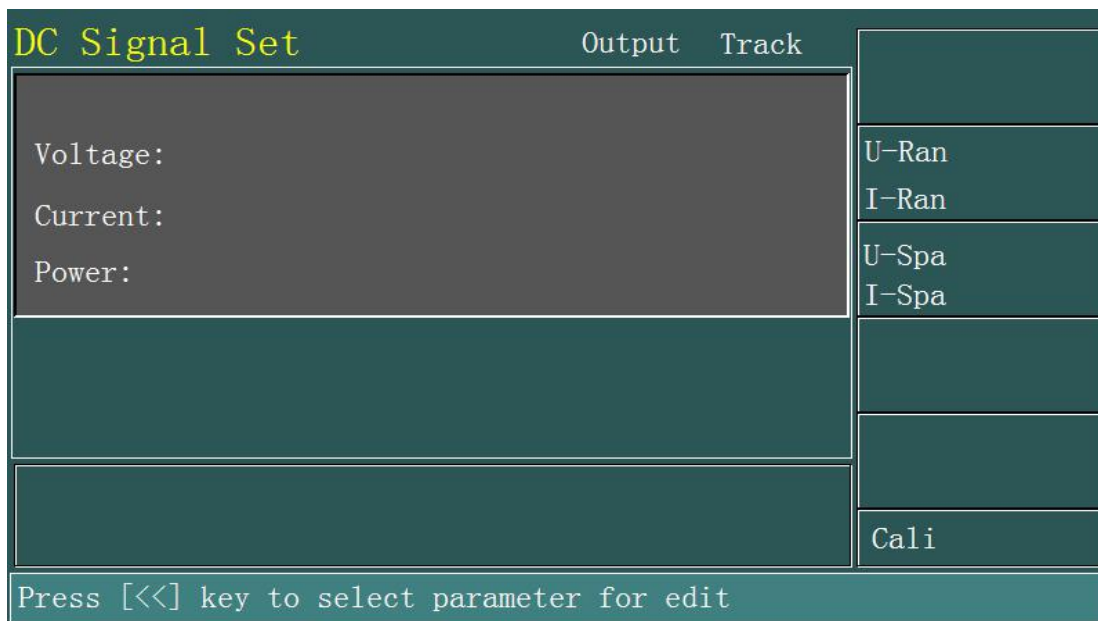


Figure 8:DC operating window

- **Voltage and current range setting:** Press the corresponding [< <] key and highlight the voltage range 10.0V, change the range by the up and down key, and press the [confirm] key to execute. Press the [< <] key once to enter the current path setting. And setting is the same way.
- **Voltage range shortcut key definition:** Select range directly through numeric keys:1:75mV, 2:150mV, 3:300mV, 4:3V, 5:6V, 6:10V, 7:75V, 8:150V, 9:300V, 0:500V
- **Current path shortcut key definition:** Select range directly through numeric keys:1:30uA, 2:300uA, 3:3mA, 4:30mA, 5:300mA, 6:1A, 7:5A, 8:20A
- **Voltage and current amplitude adjustment:** According to the corresponding key[< <] , the voltage amplitude 00.000% is highlighted. The right and left keys move the cursor to change the setting fineness, and the up and down key to change the amplitude, and the output amplitude is set according to [output] key. Enter the current range setting by pressing the [< <] key once
- **Voltage and current amplitude shortcut key definition:** 1:10%, 2:20%, 3:30%, 4:40%, 5:50%, 6:60%, 7:70%, 8:80%, 9:90%, 0:100%

VI. Standard configuration

1	Hosts	1
2	Test line	1
3	RS232 communication line	1
4	Pulse line	1
5	power cable	1
6	CD	1
7	Aluminum alloy box	1
8	manual	1
9	Test Report	1
10	Certification	1