USER MANUAL

RND 320-KA3000 Series

Safety Symbols

This chapter contains important safety instructions that you must follow when operating the RND 320-KA3000 series and when keeping it in storage. Read the following before any operation to insure your safety and to keep the best condition for the RND 320-KA3000 series.

Safety Symbols

These safety symbols may appear in this manual or on the series..

WARNING

DANGER High Voltage

Earth (ground) Terminal

Safety Instruction

Safety Guidelines

- Do not block or obstruct the cooling fan vent opening.
- Avoid severe impacts or rough handling that leads to damage.
- Do not discharge static electricity.
- Do not disassemble unless you are qualified as service personnel.

AC Input

- AC Inut Voltage: 230 V, 50 Hz
- Connect the protective grounding conductor of the AC power cord to an earth ground, to avoid electrical shock.

Operation Environment

- Location: Indoor, no direct sunlight, dust free, almost non-conductive pollution (note below)
- Relative Humidity: < 80%
- Altitude: < 2000 m
- Temperature: 0 – 40 °C

Storage environment

- Location: Indoor
- Relative Humidity: < 70%
- Temperature: -10 – 70 °C

Fuse

MODEL	220/230 V
RND 320-KA3005D RND 320-KA3005P	T3 A/250 V

- To ensure fire protection, replace the fuse only with the specified type and rating.
- Disconnect the power cord before fuse replacement.
- Make sure the cause of fuse blowout is fixed before fuse replacement.

Series Lineup

MODEL	V METER	A METER	USB	RESOLUTION
RND 320-KA3005D RND 320-KA3005P	4 DIGIT	4 DIGIT	NO	10mV / 1mA

Main Features

Performance

Low noise: cooling fan controlled by Heatsink temperature.

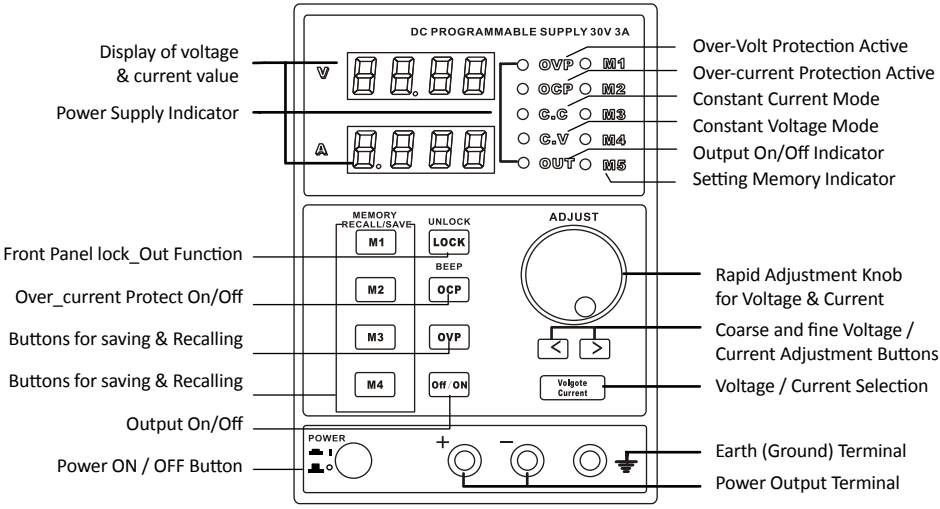
Operation

- Compact size, light weight / Constant voltage / constant Current operation
- Output On / Off Control / Digital panel control /Software calibration / Beep output
- 4 pairs of panel setup save / recall Coarse and fine Voltage / Current Control

Protection

- button lock function / Overload protection / Reverse polarity protection
- USB/RS232 for remote control

Front Panel Overview



Display

Voltage level

V — Voltmeter displays the setup value of output voltage.

Current level

A — Displays the setup value of output current.

Condition Indication

● OVP — OVP is the indicator of overvoltage protection. When overvoltage function is turned on, ● OVP indicator lights on; when output voltage is higher than protection setup value due to unexpected conditions, output cuts off and OVP indicator flickers; Press the button OVP again, and the power supply recovers.

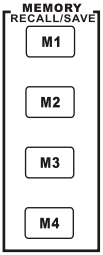
- OCP — OCP is OCP indicator. When overcurrent function is turned on, indicator lights on.
- C.C — C.C is constant current indicator. When power supply is in the mode of constant current, this light is on.
- C.V — C.V is constant voltage indicator. When power supply is in the mode of constant voltage, this light is on.
- OUT — OUT is output indicator. If light on, there is voltage output in the output terminal.

Storage Indication

- M1
- M2
- M3
- M4
- M5

Indication of saving and recalling 5 setups stored internally;
When LOCK indication turns on, the front panel button operation is locked.

Brief Introduction of Panel Operation



Saves or recalls panel settings. For settings, 1 ~ 4 are available.
For save / recall details, see Page 13

UNLOCK
LOCK

Front panel LOCK function. For details, see Page 11.

BEEP
OCP

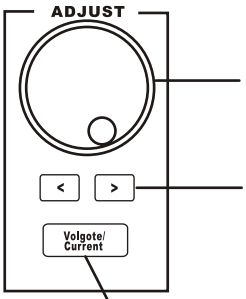
Over-Current protect on/off,. Pressing this button for more than 2 secends will make beep On/OFF.

OVP

Over-votage Protect On/Off

Off / ON

Output On/Off



Voltage-Current Setting Adjustment

Digit Selector Buttons

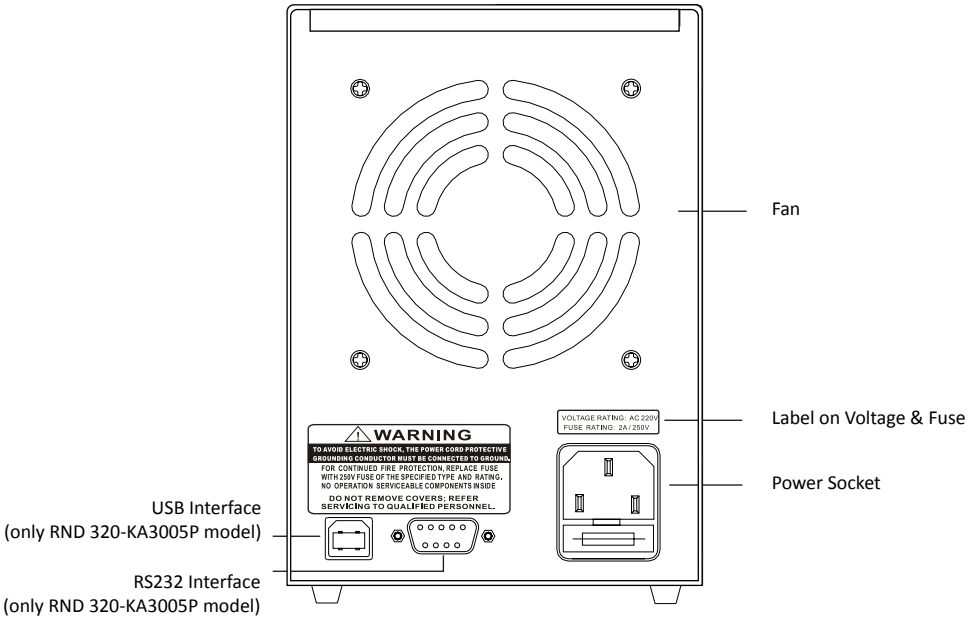
Selection Voltage / Current for Adjustment Pressing the button, the volt indicator starts to blink; pressing it again, the ampere indicator starts to blink. Then turn the ADJUST knob and the settings of voltage or current can be adjusted.

POWER

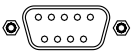
On / Off main power. For power up sequence, see Page 10.

Outputs voltage and current.

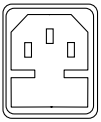
Connects the ground (earth) terminal.



USB dependent interface bas ed on remote control order (see Page 14);
only for 320-KA3005P model.



RS232 dependent interface based on remote control order (see Page 14);
only for 320-KA3005P model.

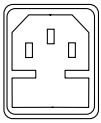


The power cord socket mainly accepts AC values: 115V / 230V, 50 / 60 Hz.
Please refer to the fuse parameters on the back fuse label to replace the specified fuse.

Make sure the correct type of fuse is installed before power up.

Operation

Connect AC power cord



Connecting AC power cord and selecting the corresponding AC voltage according to the back label on voltage; then connecting the AC power cord to the socket on the back panel.

Power on3

Press the power switch to turn power on.
The display initializes, showing the model of the machine and then showing the setting last.

Power off

Press the power switch again to turn power off.

Output On / Off

Panel Operation

Press the Output button to turn on output; and the button LED also turns on. Pressing the Output button again to turn off the output and the LED.

Note: If there are any of the following conditions, the output will automatically turn off.

1. OVP turns on and there are unusual OVP on the output terminal.
2. The setting voltage is more than that of the OVP.
3. Recalling other setups from the memory.

Beep On / Off

Panel Operation

By default, the beep sound is enabled. To turn off he beep, press the OCP (BEEP) button for 2 seconds. A beep comes out and the beep setting will be turned off. To enable the beep, press the OCP (BEEP) button again for 2 seconds.

Front Panel Lock

Panel operation

Press the LOCK button to lock the front panel button operation. To unlock, press the LOCK button for 2 seconds.

Output Set

Panel operation

1. Connecti ng the load to the front port, red(+),black (-) .
2. Setting output voltage and current. Press the button Voltage/Current selecti on to switch voltage adjustm ent and current adjustm ent. Adjusti ng voltage and current with Voltage / Current Adjustm ent knob. By default, the Voltage and Current knob work in the coarse mode. To acti vate the fine mode, press the buttons to select the coarse mode or the fine mode.
3. Turning on the output and pressing the output button. The button LED turns on and displays CV or CC mode.

Save Setup

Background

The front panel settings can be stored into one of the four internal memories.

Contents

The following list shows the setup contents:

- Fine / coarse knob editing mode
- Beep on / off
- Output voltage / current level

The following settings are always saved as «off»:

- Output on / off
- Front panel lock on / off

Panel operation

Press one of the 4 buttons (M 1,M2,M3,M4) and the LED light turns on accordingly. After you adjust the value, it is saved automatically once it stops blinking.

Recall Setup

The front panel settings can be recalled from one of the four internal memories.

Recal ls panel settings.
For settings, 1 ~ 4 are available.

- M1
- M2
- M3
- M4
- M5

Indication of saving and recalling 4 setups stored internally;
Press one of the 1 ~ 4 Memory buttons, for example number 1. The panel settings saved in memory No. 1 are recalled. The LED M1 turns on.

Note: When a setting is recalled, the output automatically turns off.

Remote Control
for RND 320-KA3005P

Remote Control Setup

Only RND 320-KA3005P can be connected to the PC through interfaces USB/RS232 on the back of the machine and controlled by the remote control.

COM setting

Set up the COM port inside

the PC according to the following list:

- Baud rate: 9600
- Parity bit: None
- Data bit: 8
- Stop bit: 1
- Data flow control: None

Functionality check

Run this query command via the terminal application such as MTTTY (Multi-threaded TTY). *DIN?

This should return the identification information: Manufacturer, model name, software version.

Remote control procedures

Entering the Remote Control Mode

1. Connect the USB cable.
2. The power supply will automatically connect. After normal connection, there will be a tweet from the power supply itself.
3. The panel buttons are locked, so the power supply can be only controlled by the computer

Note: Software must be installed first.

Exiting from the Remote Control Mode

1. Close the remote control software.
2. Disconnect USB from the back.
3. The power supply disconnects; a tweet from the beep with the hint that the remote control is over.
4. The power supply automatically comes into the panel control mode.

FAQ

Q1: The panel buttons don't work when power on.

A1: The panel is locked. Press the button for over 2 seconds, and then the panel will unlock.

Q2: Pressing ON/OFF, there is no output when power on.

A2: Current setup is 0

Q3: Output voltage rises slowly when output button is on.

A3: Current setup is too small.

Q4: Making OCP on and pressing output switch; and then the output is automatically shut off.

A4: Current protection value setup is too small. You could press output switch and then make OCP on.

Specifications

Note: The specifications below are tested under the conditions of temperation 25°C to -5 °C and the warm-up for 20 minutes.

RND 320-KA3005P/D- Model

VOLTAGE RANGE	0- 30 V
CURRENT RANGE	0- 5 A
LOAD REGULATION	
VOLTAGE RANGE	≤ 0.01% +2 mV
CURRENT RANGE	≤ 0.1% +10 mA
LINE REGULATION	
VOLTAGE RANGE	≤ 0.01% +3 mV
CURRENT RANGE	≤ 0.1% +3 mA
SETUP RESOLUTION	
VOLTAGE RANGE	10 mV
CURRENT RANGE	1 mA
SETUP ACCURACY (25°C + -5°C)	
VOLTAGE RANGE	≤ 0.5% +20 mV
CURRENT RANGE	≤ 0.5% +10 mA
RIPPLE (20 - 20 M)	
VOLTAGE RANGE	≤ 2 mVrms
CURRENT RANGE	≤ 3mArms
TEMP. COEFFICIENT	
VOLTAGE RANGE	≤ 150 ppm
CURRENT RANGE	≤ 150 ppm
READ BACK RESOLUTION	
VOLTAGE RANGE	10 mV
CURRENT RANGE	1 mA
READ BACK TEMP. COEFFICIENT	
VOLTAGE RANGE	≤ 150 ppm
CURRENT RANGE	≤ 150 ppm

REACTION TIME	
VOLTAGE RANGE CURRENT RANGE	≤ 100 mS ≤ 100 mS
INTERFACE RND 320-KA3005P	RS232 USB
ACCESSORIES	USER MANUAL*1, POWER CORD*1
WEIGHT AND DIMENSION	110mm(W)* 156mm(H)* 260(D)

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