# KORAD

DONGGUAN KORAD TECHNOLOGY CO., LTD.

# KKG SERIES POWER SUPPLY USER MANUAL

| Reaction Time | | | |
|---|---|---|---|
| Voltage Tise Voltage Drop | ≤100mS<br>≤100mS<br>(10% Rated load) | ≤100mS<br>≤100mS<br>(10% Rated load) | ≤100mS<br>≤100mS<br>(10% Rated load) |
| Interface (for programmable models only) | | | |
| RS232, USB | | | |
| Accessories | | | |
| User manual *1, Power cord*1, USB cable (for programmable models KKG305P, KKG3010P & KA6005P) | | | |
| Weight and Dimension | | | |
| 110mm(W)*160mm(H)*305mm(D): KKG605x8.1kg & KKG3010x8.1kg<br>110mm(W)*160mm(H)*262mm(D): KKG3005x4.8kg | | | |

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## Features of KKG DC Linear Power Supply:

1. Internal solid-state relay is adjusted, and there is no relay switching noise in the entire output voltage range
2. Current 0.1ma display function
3. Power display function
4. External switch quantity system port, which can control output or trigger, and indicate CC or CV
5. Two voltage and current adjustment methods, convenient and quick to adjust parameter
6. Voltage output sequence function (only for models with communication interface)
7. OCP & OVP functions can be set
8. 5 groups of voltage and current parameters storage
9. Digital screen display, including display of all operating functions
10. Output compensation function, which can compensate the voltage drop caused by the output wire
11. It can set shutdown memory and non-memory function of the output state
12. Configurable USB, RS232, 485 interfaces, etc. (only for models with communication interface)
13. Carrying 2 communication protocols: Modbus and SCPI communication protocol (only for models with communication interface)

## Specifications

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

| Models | KKG305D/P | KKG3010D/P | KKG605D/P |
|---|---|---|---|
| Voltage Range | 0-30V | 0-30V | 0-60V |
| Current Range | 0-5A | 0-10A | 0-5A |
| **Load Regulation** | | | |
| Voltage | ≤0.01%+2mV | ≤0.01%+3mV | ≤0.01%+2mV |
| Current | ≤0.1%+5mA | ≤0.1%+10mA | ≤0.1%+5mA |
| **Line Regulation** | | | |
| Voltage | ≤0.01%+3mV | ≤0.01%+3mV | ≤0.01%+3mV |
| Current | ≤0.1%+3mA | ≤0.1%+3mA | ≤0.1%+3mA |
| **Setup Resolution** | | | |
| Voltage | 10mV | 10mV | 10mV |
| Current | 1mA | 1mA | 1mA |
| **Setup Accuracy(25°C+-5°C)** | | | |
| Voltage | ≤0.5%+20mV | ≤0.5%+20mV | ≤0.5%+30mV |
| Current | ≤0.5%+5mA | ≤0.5%+10mA | ≤0.5%+5mA |
| **Ripple(20-20M)** | | | |
| Voltage | ≤2mVrms | ≤2mVrms | ≤1mVrms |
| Current | ≤3mArms | ≤5mArms | ≤3mArms |
| **Temp. Coefficient** | | | |
| Voltage | ≤150ppm | ≤150ppm | ≤150ppm |
| Current | ≤150ppm | ≤150ppm | ≤150ppm |
| **Read Back Resolution** | | | |
| Voltage | 10mV | 10mV | 10mV |
| Current | 1mA (C≤0.5A:0.1mA) | 1mA (C≤0.5A:0.1mA) | 1mA (C≤0.5A:0.1mA) |
| **Read Back Temp. Coefficient** | | | |
| Voltage | ≤150ppm | ≤150ppm | ≤150ppm |
| Current | ≤150ppm | ≤150ppm | ≤150ppm |

## 9. OVP Overvoltage Protection Function Settings and Instructions

### 9.1 Open and close OVP

Note: press the button [OVP] to turn on or off the OVP function. When the output voltage is higher than the OVP setting protection value after OVP is turned on, the output will be turned off.

### 9.2 Set the value of OVP

Note: press and hold the key [OVP] for one second to enter the OVP setting. At this time, the OVP indicator flashes, indicating that it is in the OVP setting function. Use the left and right keys to select the adjustment bit, adjust the data size through the knob, and long press the OVP to save and exit.

## 10. OCP Instructions

### 10.1 Turn OCP ON or OFF

Note: press the button [OCP] to turn OCP ON or OFF.

### 10.2 Set the value of OCP

Note: press and hold the button [OCP] for one second to enter the OCP setting. At this time, the OCP indicator flashes. Use the left and right buttons to select the adjustment bit, and use the knob to adjust the size of the data bit. Long press the OCP to save and exit.
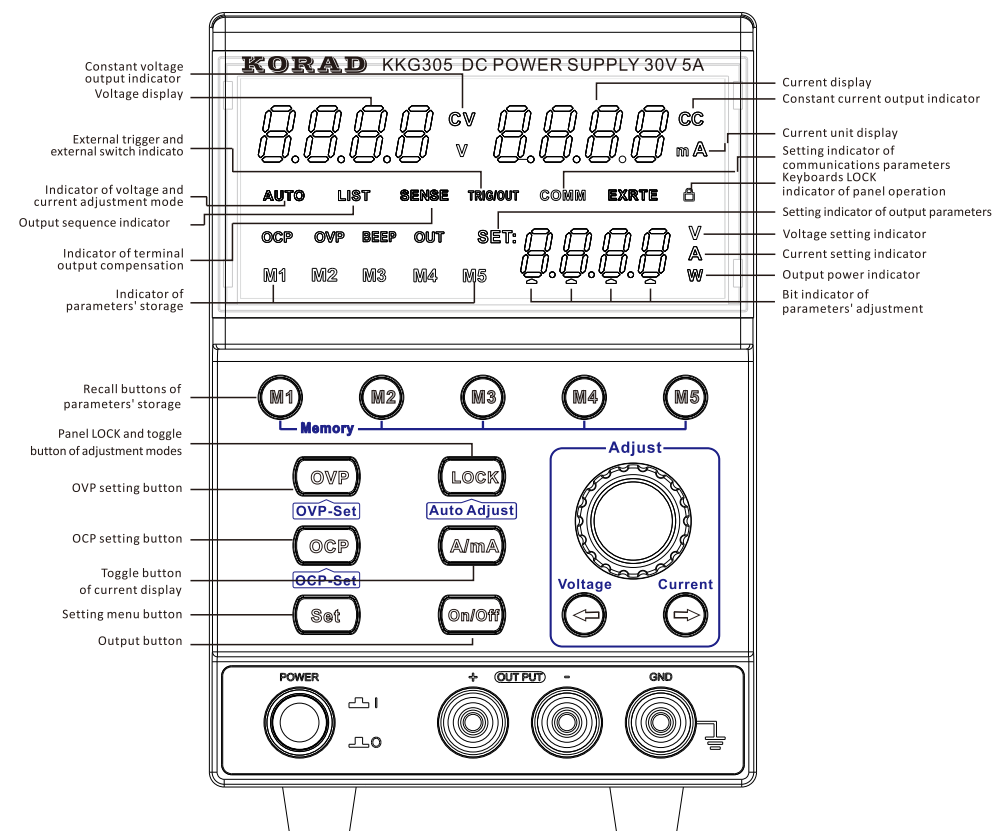
## 11. LOCK ON and OFF

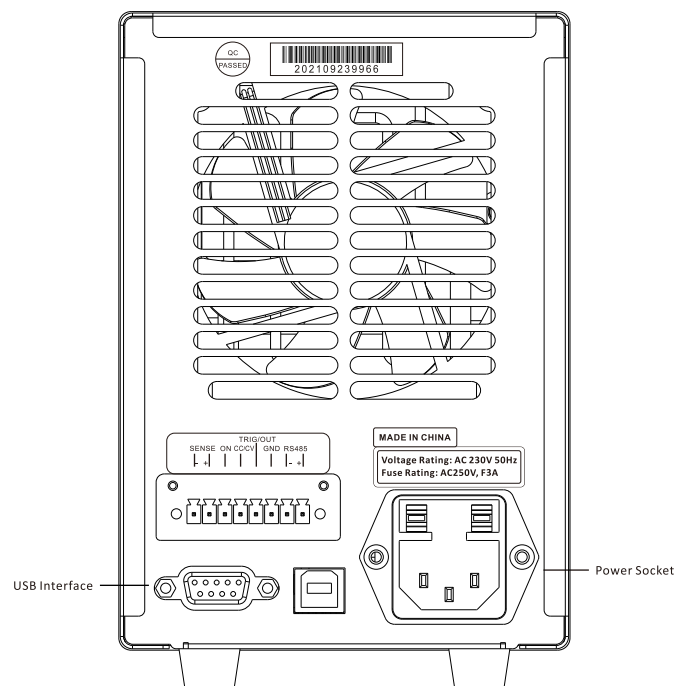Note: press and hold the key [LOCK] for one second to turn on or off the keyboard LOCK function.

## 12. Current Display mA/A Manual and Automatic Switching

Note: press and hold the key [A/mA] for one second to switch between A and ma display mode. In the current display manual mode, when the current is less than 0.5A, press the key [A/mA], the current will switch to 0.1ma display, when the current is greater than 0.5A, the current will return to 1ma resolution. In the current display automatic mode, when the current is less than 0.5A, it will automatically switch to the 0.1ma resolution display mode, and when the current is greater than 0.5A, it will automatically switch to the 1ma resolution display mode.
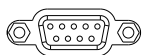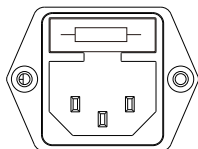
# Front Panel Overview

# REAR PANEL INTRODUCTION



USB Interface

Power Socket



USB dependent interface based on remote control order (see Page 14); only for KKGXXXXP series, such as KKG305P and so on.



RS232 dependent interface based on remote control order (see Page 14); only for KKGXXXXP series, such as KKG305P and so on.



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.

use the left and right keys to select COMM on the screen, use the knob to select the baud rate you need on the screen, and then long press the Set key to save and exit.

6.2 Communications interface Modbus interface ON and OFF
Note: press and hold the key [Set] for one second to enter the setting state, use the left and right keys to select COMM on the screen, press the Set key to select 485-on on the screen, open and close the 485 interface through the knob, and then long press the Set key to save and exit.

6.3  Communications interface Modbus interface ID
Note: press and hold the key [Set] for one second to enter the setting state, use the left and right keys to select COMM on the screen, short press the Set key to select ID-01 on the screen, set the ID you need through the knob, and then long press Set key to save and exit.

6.4 Modbus floating-point number endian mode of communications interface
Note: press and hold the key [Set] for one second to enter the setting state, use the left and right keys to select COMM on the screen, short press the Set key to select -----0 on the screen, and set the mode you need through the knob, 0-Little-endian mode, 1-big-endian mode, 2-little-endian data exchange mode, 3-big-endian data exchange mode, and then long press the Set key to save and exit.

## 7. Instructions for Turning off the Buzzer Switch

Note: press and hold the key [Set] for one second to enter the setting state, use the left and right keys to select BEEP on the screen, use the knob to select ON or OFF on the screen, and then long press the Set key to save and exit.

## 8. Output Settings, which can Set Shutdown Memory Function

Note: press and hold the key [Set] for one second to enter the setting state, use the left and right keys to select the OUT light on the screen to light up, use the knob to select ON or OFF on the screen, and then long press the Set key to save and exit. After selecting ON, the output state of the device before the shutdown will be saved. The next time the device is turned on, it will restore the state before the last shutdown. After selecting OFF, the output state of the device will be turned off every time the device is turned on.

## 3.2 LIST Setting

Note: LIST can set the change value of up to 15 steps, and each change value an only be set through the communication interface. Refer to the communication protocol for details.

## 4. Instructions for Opening and Closing Remote Compensation

The remote compensation function refers to the function of compensating the voltage drop of the wire when the output lead of the power supply is long.
Note: press and hold [Set] for one second to enter the setting state, use the left and right keys to select SENSE on the screen, use the knob to turn the screen ON or OFF, and then press and hold the Set key to save and exit.

## 5. Instructions for Opening and Closing the Remote Trigger/Switch Mode

The external switch control port can control the power output through the relay switch. 2 modes can be set, trigger mode and switch mode. In the trigger mode, a short-circuit of TRIG/ON to ground can trigger the power output to be turned on. In switch mode, short-circuit TRIG/ON to ground will open the output, and releasing it will close the output.

5.1 Closing of the remote trigger/switch mode
Note: press and hold the key [Set] for one second to enter the setting state, use the left and right keys to select TRIG/OUT on the screen, use the knob to select 0 on the screen, and then press and hold the Set key to save and exit.
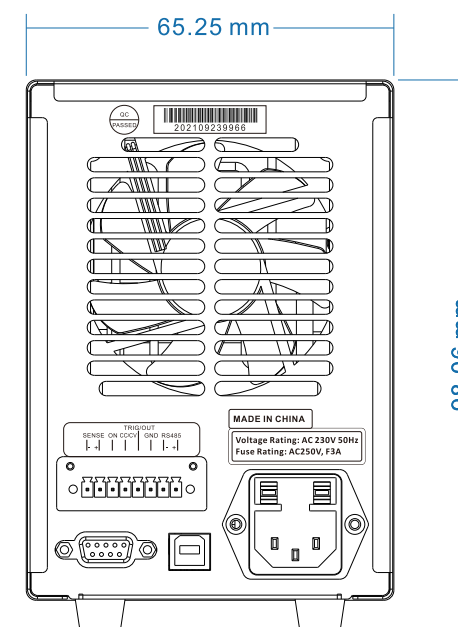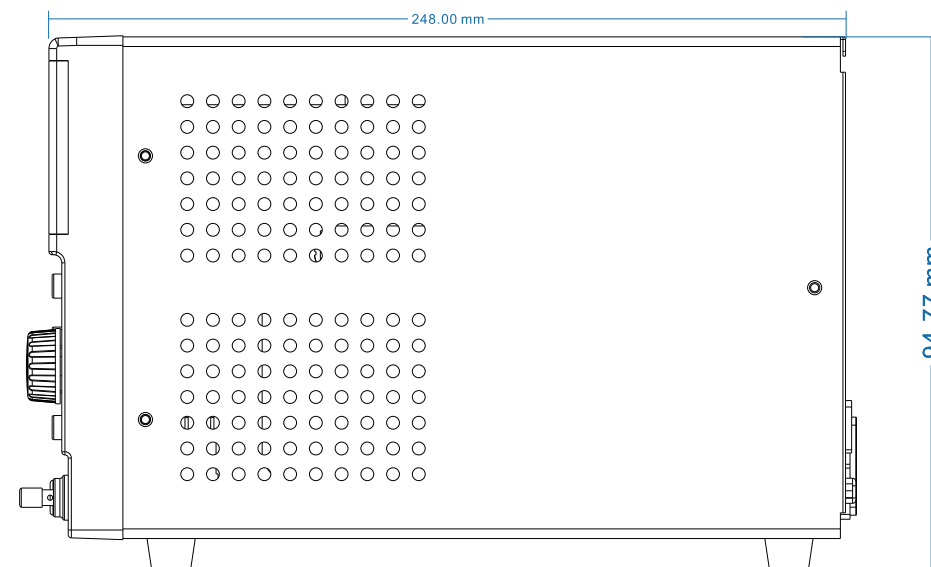
5.2 Remote Trigger ON
Note: press and hold the key [Set] for one second to enter the setting state, use the left and right keys to select TRIG/OUT on the screen, use the knob to select 1 on the screen, and then press and hold the Set key to save and exit.

5.3 Remote Switch ON
Notre: press and hold the key [Set] for one second to enter the setting state, use the left and right keys to select TRIG/OUT on the screen, use the knob to select 2 on the screen, and then long press the Set key to save and exit.

## 6. Description of Communications Interface Settings

6.1 Communications interface baud rate setting
Note: press and hold the key [Set] for one second to enter the setting state,
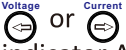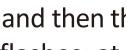
## Direction for Use

- Selection of voltage and current setting and adjustment mode
- M1-M5 storage and recall instructions
- LIST sequence output description (only for models with communication interface)
- Remote compensation opening and closing instructions
- Remote trigger/;switch on and off instructions
- Setting instructions of communications interfaces (only for models with communication interface)
- Instructions for turning off the buzzer switch
- Output instructions
- OVP instructions
- OCP instructions
- LOCK ON and OFF
- Manual and automatic switching of current display mA/A

### 1. Voltage & Current Setting and Adjustment Mode Selection

The operation of voltage and current is divided into 2 modes: automatic adjustment mode and non-automatic adjustment mode. Press the shortcut key **LOCK Auto Adjust** to switch between automatic voltage and current adjustment mode and non-automatic mode.

**Voltage and current adjustment in automatic mode:**

Indicator AUTO in automatic adjustment mode lights up.
To set the required voltage and current values for the first time, you need to press **Voltage** or **Current**, and then the voltage adjustment indicator V or the current adjustment indicator A flashes; at this time, rotate the knob to adjust the voltage or current. Press **Voltage** or **Current** again to move the adjustment bit left and right, and set the adjustment gear of the knob. After adjusting the voltage, if you want to adjust the current, press and hold the button **Current** for one second, and the setting will switch to the current setting. The A light will flash, and you can use the knob to adjust the current. The STE light will always be ON, and the power supply will remember the voltage or current adjustment. Turn the knob at any time to adjust the voltage or current. After adjusting the voltage and current, press the ON/OFF button to turn the output ON or OFF.

**Voltage and Current Adjustment Settings in Non-automatic Adjustment Mode:**

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AUTO indicator does not light up; setting the required voltage and current value, and press **Voltage** or **Current** for the first time, and then the voltage adjustment indicator or current adjustment indicator A flashes. At this time, turn the knob to adjust the voltage or current. Press **Voltage** or **Current** again to enter left and right adjustment bit, and set the gear for each adjustment. After adjusting the voltage, before the indicator V or A doesn't stop blinking, if you want to adjust the switch to current or voltage, press and hold the YY button for one second, and the setting will switch to the current setting and A indicator will flash. 4 seconds after the adjustment operation is finished, the V or A indicator stops blinking. At this time, to adjust the voltage or current again, you need to press XX or YY again.
Press the key **On/Off**, the power supply will turn on the output, and the output indicator OUT will light up.

### 2. Instructions for M1-M5

2.1 M1-M5 fast recall function
Note: by pressing M1-M5, you can quickly recall the voltage and current storage contents stored in M1-M5.

2.2 M1-M5 quick storage function
Note: you can first select M1-M5 and then you can modify the content of M1-M5. After waiting for 2 seconds, you can quickly save it to the currently selected M key.
Note: After the M key is selected, the machine will automatically select the value of the M key selected before the shutdown.

### 3. LIST Instructions (only available for models with communication interface)

General description: the LIST function includes a maximum 15-step dynamic settings of voltage and current, and the parameters can be conveniently set through the communication port. After being recalled, it can be turned on by the ON button.

3.1 LIST recall
Note: press and hold the key **Set** for one second to enter the setting state, use the left and right keys to select LIST on the screen, use the knob to turn the screen selection ON, press the Set key again and hold for one second to exit the setting, and the list indicator will be ON at this time, indicating that the power supply is in the LIST state. Press the ON/OFF button to turn on the dynamic sequence output.

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