

MODEL 7314A

REGULATED DC POWER SUPPLY

OPERATION MANUAL

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KIKUSUI ELECTRONICS CORP.

Power Requirements of this Product

Power requirements of this product have been changed and the relevant sections of the Operation Manual should be revised accordingly.

(Revision should be applied to items indicated by a check mark)

Input voltage

The input voltage of this product is _____ VAC,
and the voltage range is _____ to _____ VAC. Use the product within this range only.

Input fuse

The rating of this product's input fuse is _____ A, _____ VAC, and _____.

WARNING

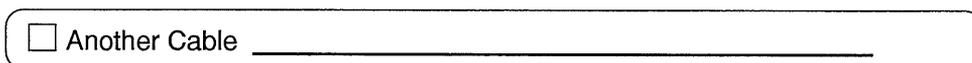
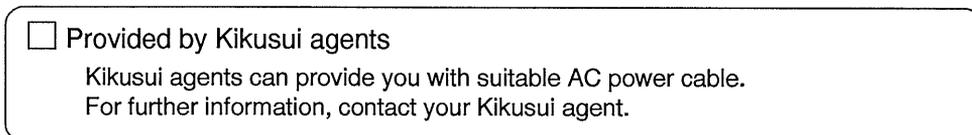
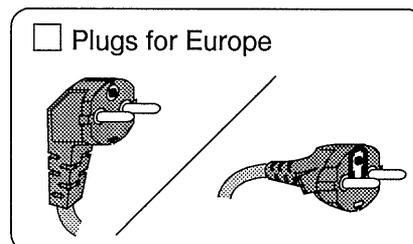
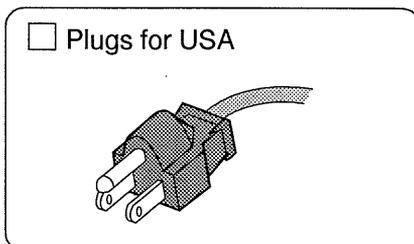
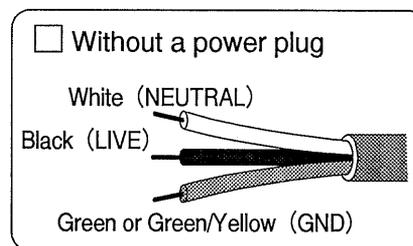
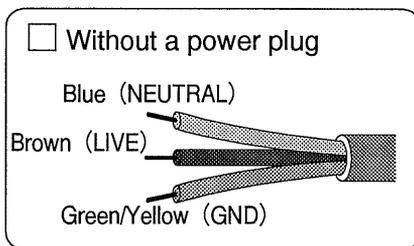
- To avoid electrical shock, always disconnect the AC power cable or turn off the switch on the switchboard before attempting to check or replace the fuse.
- Use a fuse element having a shape, rating, and characteristics suitable for this product. The use of a fuse with a different rating or one that short circuits the fuse holder may result in fire, electric shock, or irreparable damage.

AC power cable

The product is provided with AC power cables described below. If the cable has no power plug, attach a power plug or crimp-style terminals to the cable in accordance with the wire colors specified in the drawing.

WARNING

- The attachment of a power plug or crimp-style terminals must be carried out by qualified personnel.



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General Description

Kikusui Electronics Model 7314A is an all-transistorized, series controlled d-c regulated power supply whose output voltage, divided into 2 ranges of, 1 V - 15 V. And it can be variable continuously.

Maximum output current of 0.5A is available. The panel has been provided with a voltmeter and an ammeter. The output voltmeter has been interlocked with the change-over switch for output voltage and can be changed over to 2 ranges of 1 V - 8 V and 8 V - 15 V. The output ammeter can be changed over to 2 ranges of 0.12A/0.6A and the output current limiting circuit operates, respectively. The output current limiting circuit operates safely and positively against overloading and short-circuiting accident of output terminals. If overloading or shortcircuiting phenomena are eliminated, it will return to normalcy, automatically and continuously. The power supplies can be connected in series.

Specifications

AC input	_____ V 50/60 Hz
Power consumption (full-load, output 15V, 0.5A)	Approx. 20VA
Ambient temperature	Max. 35°C
Dimensions*	166 (W) x 145 (H) x 150 (D) mm
Largest part	111 (W) x 158 (H) x 205 (D) mm
Weight	Approx. 2.3 Kg
Accessories supplied	Short bar 1 Operation Manual 1 Data :

Output

- Terminals Color classification of red, white, black, 19mm intervals regular triangular arrangement
- Polarity Positive or negative polarity
- Voltage to ground Max. $\pm 100V$
- Voltage Divided in such 2 ranges as 1 - 8V and 8 - 15V and variable continuously
- Current Max. 0.5A
- Ripple 3 mVp-p

Stability

For variation of $\pm 10\%$ in AC input 20 mV

For variation of load 1 - 15V, 0 - 0.5A** 30 mV

Protection of circuit for

- over-load Fold Back type current limiting circuit 0.1/0.5A
- 2 ranges

Voltmeter Full scale 8/16V 2.5 class

Ammeter Full scale 0.12/0.6A 2.5 class

Insulation

(Between chassis and output terminal DC 250V) 10 M Ω or above

(Between chassis and power DC 1000V) 50 M Ω or above

The power supplies can be connected in series and operated.

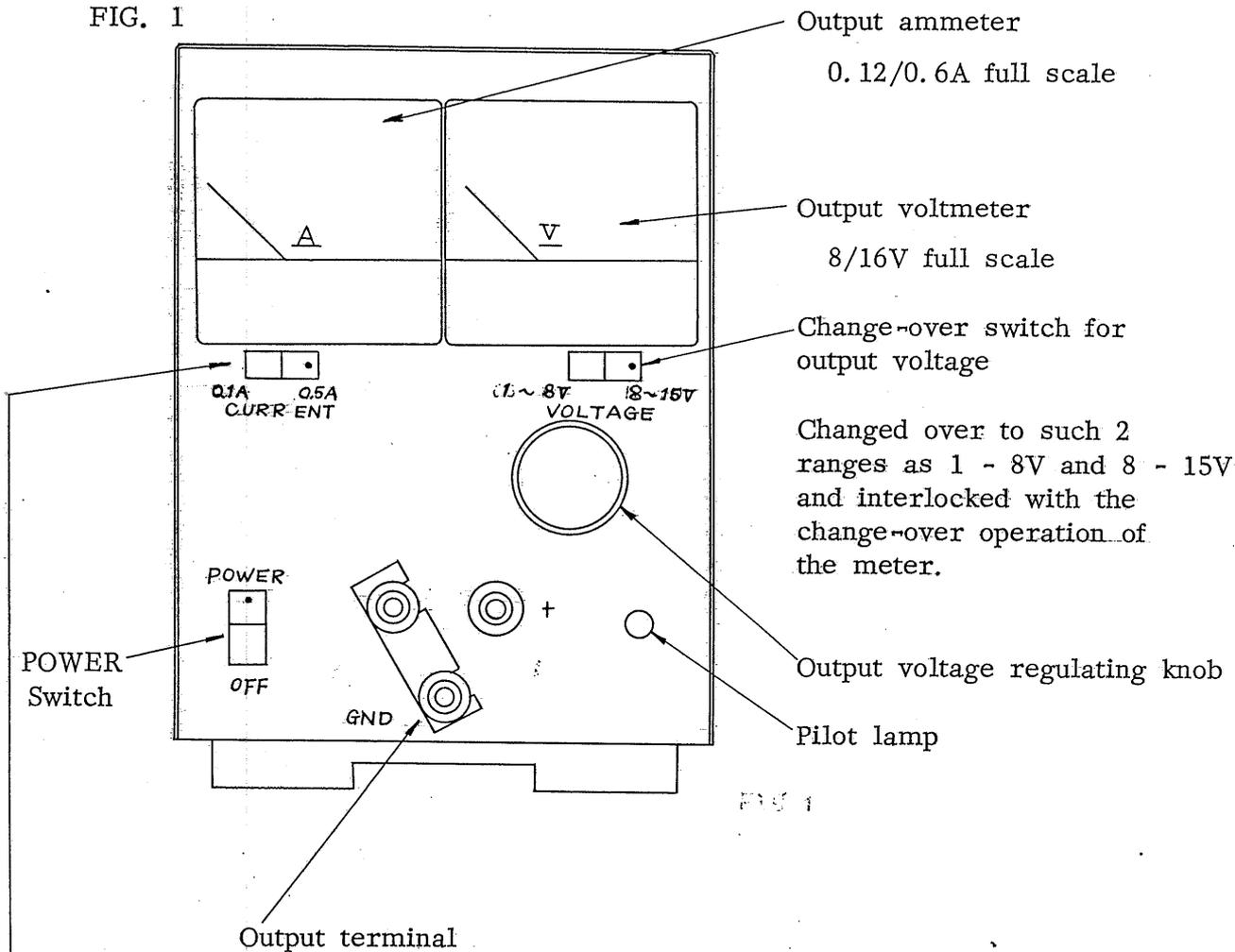
NOTES

* Possible to install 4 units on 19" and 500mm standard racks.

** The drop in voltage of ammeter is compensated through a circuit.

Description on Panel Surface

FIG. 1



Generally, the plus terminal or minus terminal is connected with the short bar attached to GND Terminal (connected electrically with chassis, panel) for use. It is possible to operate it by applying the d-c bias up to ± 100 volts.

Change-over switch for output current

This switch changes over the ranges of 0.12/0.6A of the meter and the output current limiting circuit. It has been provided with an output current limiting circuit with fold back characteristics for protecting the INSTRUMENT, and other external connection circuits against damage due to overload and shortcircuiting accidents.

Operation

1. Cautions for Installation

Be sure to avoid using the power supply in such a place where the ambient temperature exceeds 35°C. If drafting condition is poor or the power supply is exposed to direct sunlight or radiation heat from other heat sources, be sure to limit the maximum output current (0.5A) appropriately.

The safe operation range of power voltage of the unit is 90 - 110% of the rated voltage.

2. Overshooting of Output Voltage

When the power source is turned on or off, the output voltage will not exceed the set value.

3. Output Current Limiting Circuit

When the output is shorted accidentally, the series transistors, output ammeter and etc. might be damaged. In order to prevent them from being damaged, this unit has been provided with an output current limiting circuit which operates positively and electronically. When the output current reaches the set value (0.1A or 0.5A), the output current limiting circuit with the fold back characteristics will

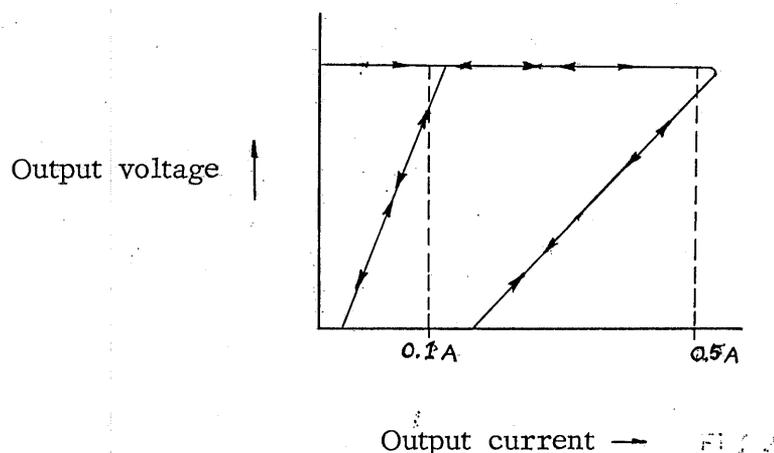
drop both output voltage and output current.

The output limiting current is set by the change-over switch for output current located on the panel surface and the meter range, changed over at the same time.

If load returns to normalcy, it will return automatically and continuously to constant voltage function.

(Refer to Fig. 2)

FIG. 2

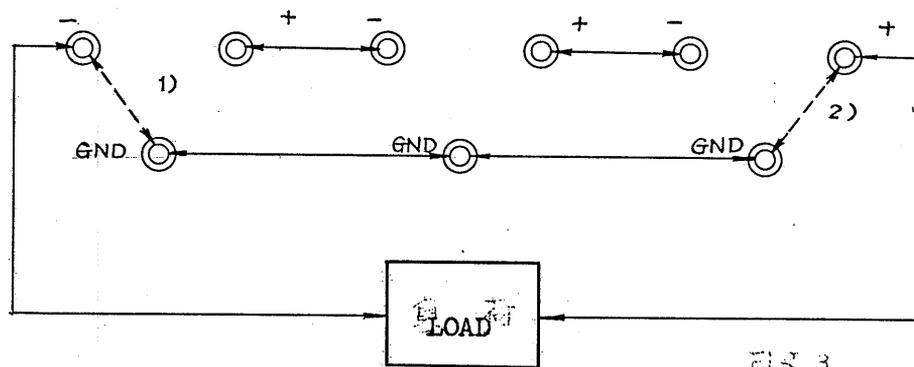


As this unit has been provided with the aforementioned output current limit circuit, it will function positively and safely even when the load is pure resistance or capacitive or lamp.

4. Overload Protection in Series Operation

Voltage of 15V or above is available by connecting more than 2 units of power supply in series. In this case, any of the terminals should not exceed $\pm 100V$ against panel chassis. (Refer to Fig. 3 for connection procedure.)

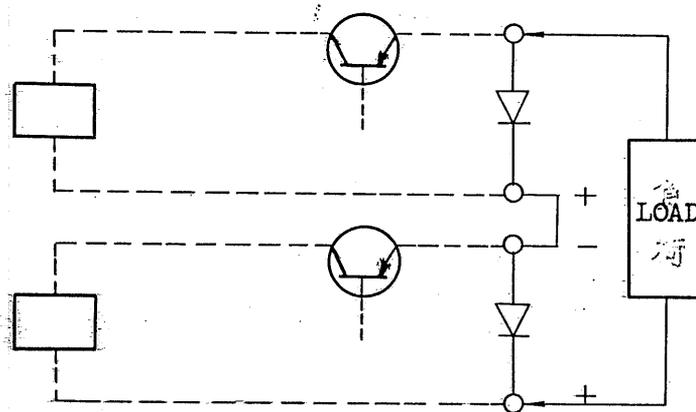
FIG. 3



- 1) In the case of minus earthing
- 2) In the case of plus earthing

When more than 2 units of power supply are connected in series and operated, if an overload phenomenon should develop, inverse voltage will be applied to the unit of which overload protection circuit has worked earlier. In order to prevent such, diodes are inserted among the respective output terminals as shown in Fig. 4.

FIG. 4



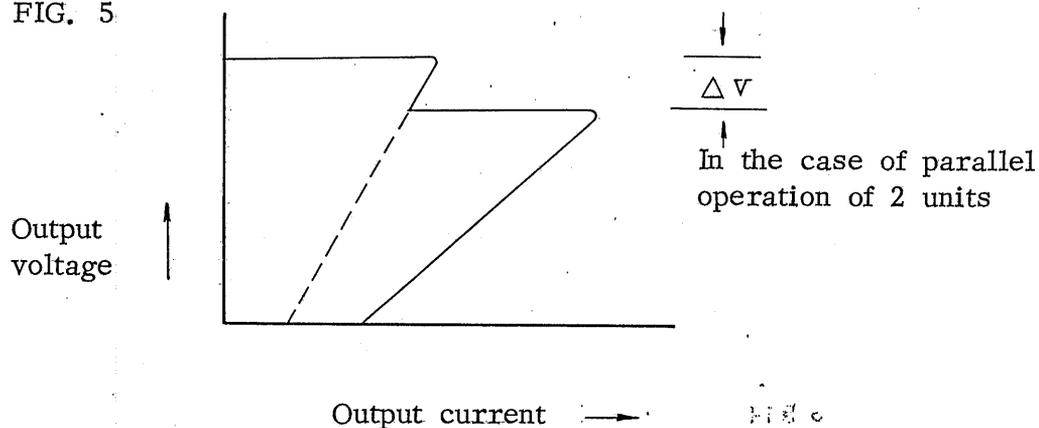
5. Parallel Operation

More than the portion of 1 unit of output current is available when more than 2 units of power supply are connected in parallel.

However, limitation is placed on use range for obtaining the characteristics shown in Fig. 5.

In the case of Fig. 5, a step of difference ΔV in output voltage is caused. Therefore, the output voltages of the both units must be as near as possible.

FIG. 5



6. Maintenance

When a faulty part has been replaced or the output voltage deviates, adjust the 7314A as follows:

6.1 Adjustment of 16-volt voltage

Set the voltage range switch to the 0.5 - 16V range, and turn the voltage control knob full clockwise to the maximum voltage position. Adjust the semifixed resistor (① in Fig.6) on the printed board for a meter reading of 16 V.

6.2 Adjustment of 0-volt voltage

Set the voltage range switch to the 0.5 - 10V range, and turn the voltage control knob full counterclockwise to the minimum voltage position. Adjust the semifixed resistor (② in Fig.6) on the printed board for a meter reading of 0V.

Repeat the above adjustments several times.

FIG. 6

