MODEL 7314B

REGULATED DC POWER SUPPLY

OPERATION MANUAL

印刷表紙使用のこと

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.

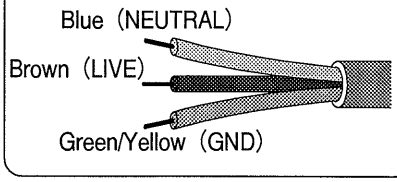
☐ AC power cable

The product is porvided 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.

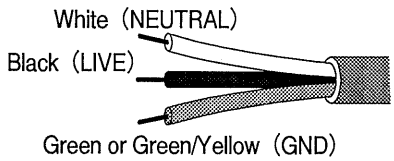
**WARNING**

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

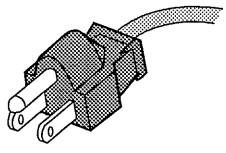
☐ Without a power plug



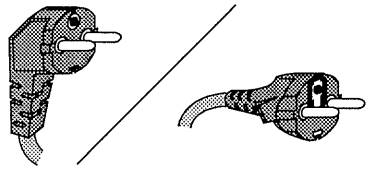

☐ Without a power plug




☐ Plugs for USA



☐ Plugs for Europe



☐ Provided by Kikusui agents

Kikusui agents can provide you with suitable AC power cable.
For further information, contact your Kikusui agent.

☐ Another Cable _____

 Kikusui Part No. Z9-000-027 IB001681

KIKUSUI

# SPECIFICATIONS

| | |
|---|---|
| AC Input | _____V AC 50 or 60 Hz |
| | Full load approx. 35 VA |
| Ambient Temperature | Max. 40°C |
| Dimensions * | 106 (W) x 145 (H) x 150 (D) mm |
| (Max.) | 111 (W) x 158 (H) x 205 (D) mm |
| Weight | 3 kg |
| Accessories Supplied | Short bar 1 |
| | Operation Manual 1 |

OUTPUT:

| | |
|---|---|
| Terminals | Horizontally aligned at 19-mm intervals; Classified by colors in red, white, and black |
| Polarity | Positive or negative |
| Floating Voltage | Max. ±100 V |
| Voltage | Continuously variable in two ranges of: 0.5 - 10 V and 10 - 20 V |
| Current | Max. 0.5 A |
| Ripple | 1 mVrms |
| Regulation | Line fluctuation (against ±10% fluctuation of input voltage 10 mV |
| | Load fluctuation ** (against 0 - 100% fluctuation of load) 10 mV |

| | |
|---|---|
| Overload Protection | Automatic crossover current limiting circuit;<br>Switchable to two ranges of:<br>0.1 A and 0.5 A |
| Voltmeter | Switchable to 2 ranges of 22 and 11 V;<br>Accuracy: 2.5% of full scale |
| Ammeter | Switchable to 2 ranges of 0.6 and 0.12 A;<br>Accuracy: 2.5% of full scale |

* Four units of Model 7314B can be mounted on a 19" or 500 mm standard rack.

** Voltage drop caused by the ammeter is compensated in the circuit.

## GENERAL

Kikusui Electronics Model 7314B is an all-transistorized regulated DC power supply of series type. Its output voltage is continuously variable from 0.5 V to 20 V in two ranges, and its maximum output current is 0.5 A.

The output voltage range can be selectively switched with the output voltmeter to either 0.5 - 10 V or 10 V - 20 V, and the output current range is switchable to either 0.1 A or 0.5 A. The output current limiting circuit is linked with the output ammeter.

When overload condition occurs or the output terminals are accidentally shorted, the reliable and trouble-free output current limiting circuit operates. Model 7314B resumes its normal operation automatically and continuously at the removal of such overload or short-circuit condition.

It is possible to perform series operation of Model 7314B.

## CONTENTS

FRONT PANEL

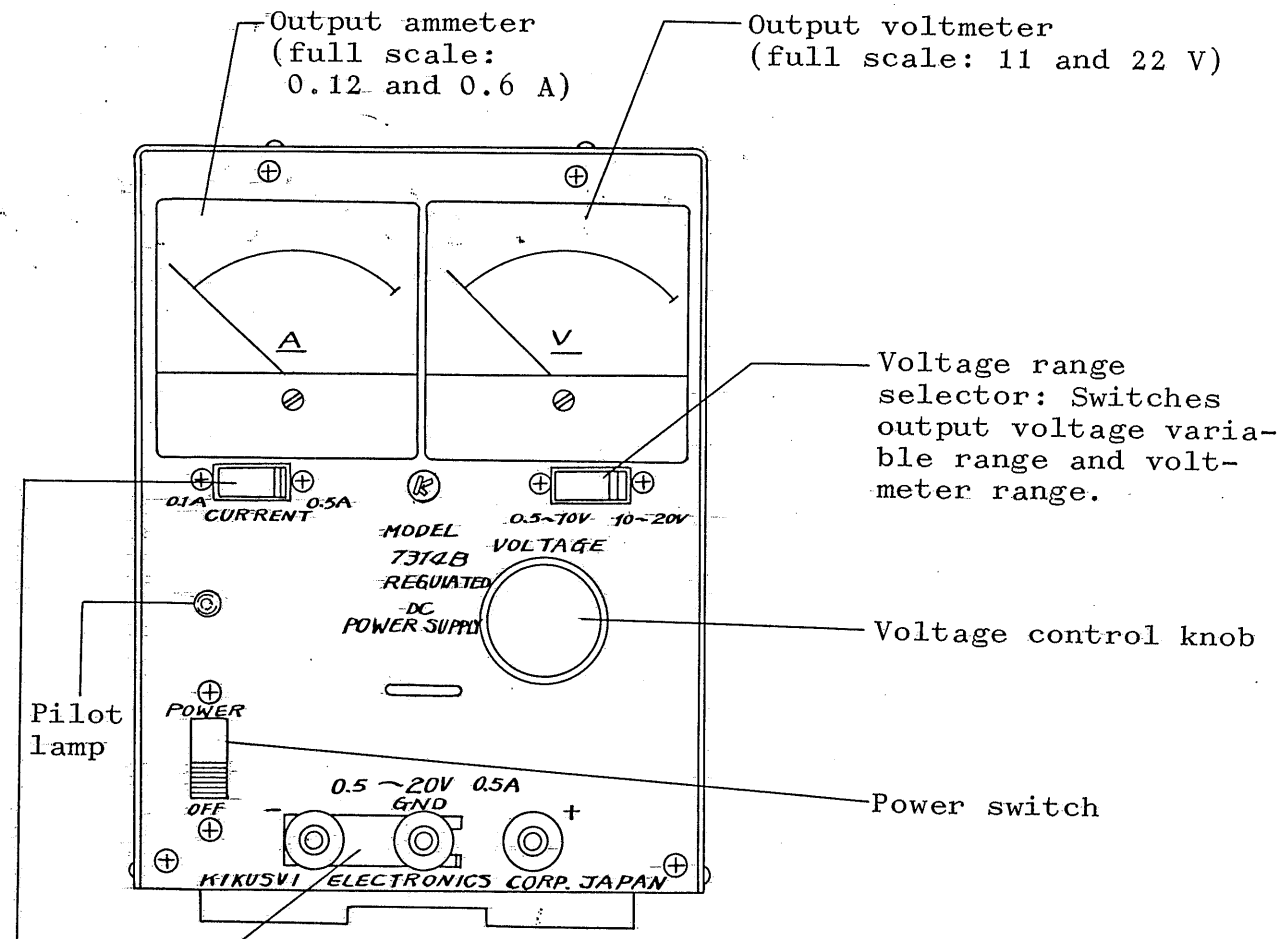



Fig. 1

Output terminals:

Normally Model 7314B is used with positive or negative terminal connected with GND terminal (electrically connected with chassis and panel) by means of accessory short bar. It is also possible to operate the equipment by applying DC bias of ±100 V maximum.

Current range selector:

Switches ammeter range to 0.6 A or 0.12 A and also output current limiting circuit.

# OPERATION

1. Caution for installation

   Avoid using Model 7314B in a place where ambient temperature exceeds 40°C. The maximum output current (0.5 A) must be properly limited when ventilation is insufficient, or the equipment is exposed to direct rays of the sun or to radiation from any heat source.

   The safety range of input voltage for Model 7314B is from 90 to 110% of the rated voltage.

2. Overshoot of output voltage

   In Model 7314B, its output voltage is prevented from increasing any further than the preset value when line power is turned on or off.

3. Output current limiting circuit

   Model 7314B is provided with an electronic trouble-free current limiting circuit in order to protect series transistors and output ammeter as well as other component parts from damage when the output terminals are accidentally shorted. This circuit is of a hold-off type which decreases both output voltage and current when the output current reaches the preset value (0.1 or 0.5 A). The output current limiting range is set by means of the current range selector on the front panel, and simultaneously the ammeter range is also switched.

When the load resumes the normal condition, the equipment restarts its voltage regulating operation automatically and continuously.

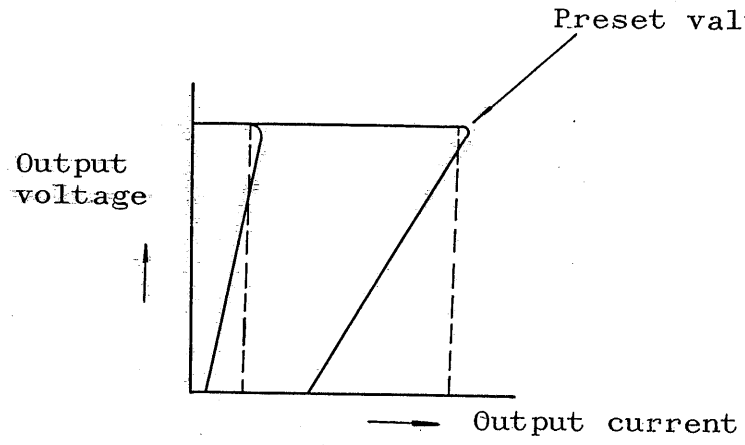



Fig. 2

4. Series operation, and overload protection in series operation

It is possible to supply a voltage of higher than 20 V by connecting more than two units of Model 7314B in series. In this case, floating voltage at any terminal must not exceed ±100 V against the panel and chassis. (See Fig. 3 for connection.)

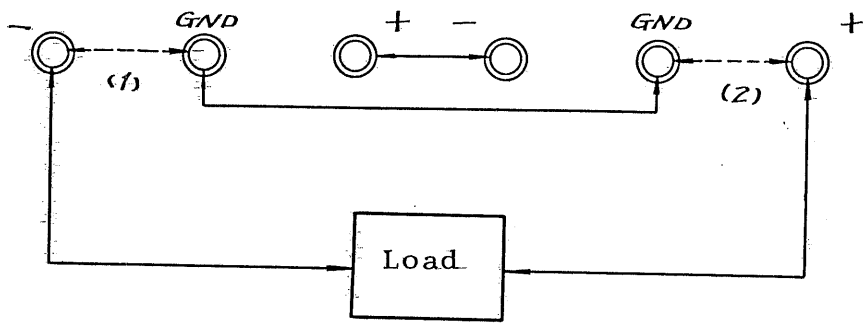



Fig. 3

1) Case of negative grounding

2) Case of positive grounding

When overload condition occurs in the operation of more than two units of Model 7314B connected in series, an inverse voltage is impressed on the unit of which overload protection circuit operated first. In order to prevent this, diodes are connected between the respective output terminals as shown in Fig. 4.

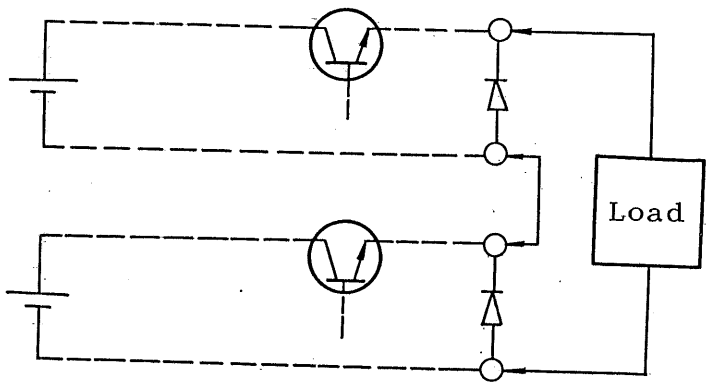



Fig. 4

5. Parallel operation

It is possible to obtain greater output current by connecting the output terminals of more than two units of Model 7314B in parallel. However, the applicable range is limited due to its characteristic as shown in Fig. 5. In case of Fig. 5, there appears a step of △V in the output voltage. Therefore the output voltage of both equipments must be adjusted to become as close to each other as possible.

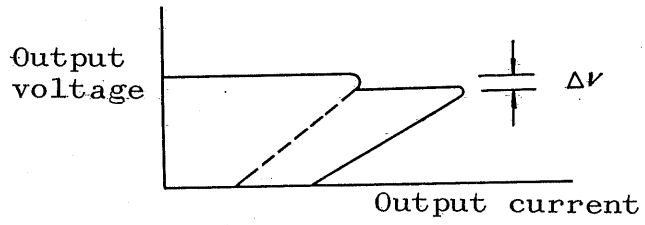



Fig. 5

# MAINTENANCE

When any defective component part is replaced and output voltage indication needs calibration, make readjustment in the following procedure.

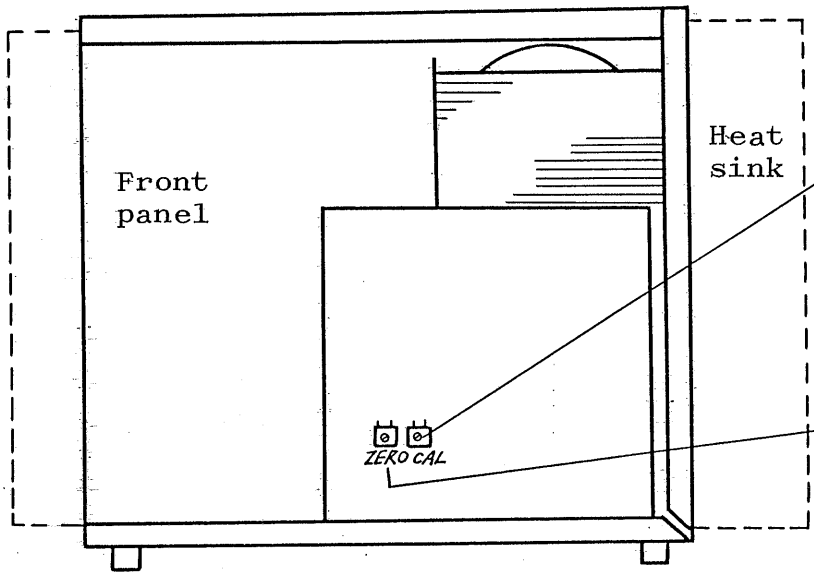
a) 20.5 V adjustment

Set the voltage range selector to the 10 - 20 V range, and turn the voltage control knob clockwise to its extreme position. Then adjust the output voltage to 20.5 V by turning the semi-fixed resistor $R_{14}$ (marked "CAL") for calibration.

b) 0 V adjustment

Set the voltage range selector to the 0.5 - 10 V range, and turn the voltage control knob counterclockwise to its extreme position. Then adjust the output voltage to 0 V by turning the semi-fixed resistor $R_{15}$ (marked "ZERO") for zero adjustment.

As both a) and b) adjustments have effects on each other, it is necessary to repeat the above adjustments several times.




$R_{14}$ (CAL):
Semi-fixed resistor for 20.5 V calibration

$R_{13}$ (ZERO):
Semi-fixed resistor for zero adjustment

Fig. 6