MODEL 7315A

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.

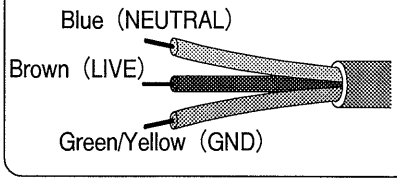
☐ AC power cable

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.

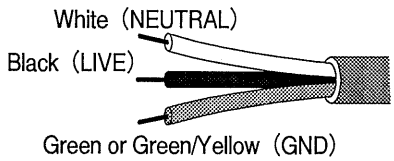
WARNING

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

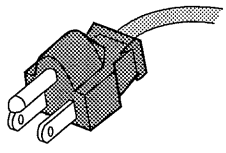
☐ Without a power plug



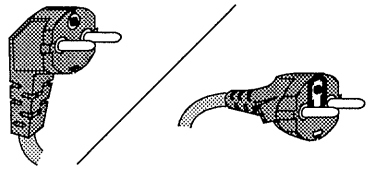
☐ Without a power plug



☐ 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

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General Description

Kikusui Electronics Model 7315A is an all-transistorized, series controlled d-c regulated power supply whose output voltage, divided into 2 ranges of, 0.5 - 20V. And it can be variable continuously. Maximum output current of 1A 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 0.5 - 10V and 10 - 20V. The output ammeter can be changed over to 2 ranges of 0.22/1.1A and the output current limiting circuit operates, respectively. The output current limit circuit operates safely and positively against overloading and shortcircuiting 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 20V, 1A)	Approx. 50VA
Ambient temperature	Max. 40°C
Dimensions:*	106 (W) x 145 (H) x 150 (D) mm
Largest part	111 (W) x 158 (H) x 205 (D) mm
Weight	Approx. 3 Kg
Accessories supplied	Short bar 1 Operation Manual 1 Test Table 1

Output

Terminals	Color classification of red, white, black, 19mm intervals regular triangular arrangement
Polarity	Positive or negative polarity
Voltage to ground	Max. ±100V
Voltage	Divided in such 2 ranges as 0.5 - 10V and 10 - 20V and variable continuously
Current	Max. 1.0A
Ripple	2 mVp-p

Stability

For variation of ±10% in AC input	10 mV
For variation of load 0.5 - 20V, 0 - 1.0A**	10 mV

Protection of circuit for over-load	Fold Back type current limiting circuit 0.2/1.0A
	2 ranges
Voltmeter	Full scale 11/22V 2.5 class
Ammeter	Full scale 0.22/1.1A 2.5 class

Insulation

(Between chassis and output terminal DC 250V)	10 MΩ or above
(Between chassis and power DC 1000V)	50 MΩ or above

The power supplies can be connected in series and operated.

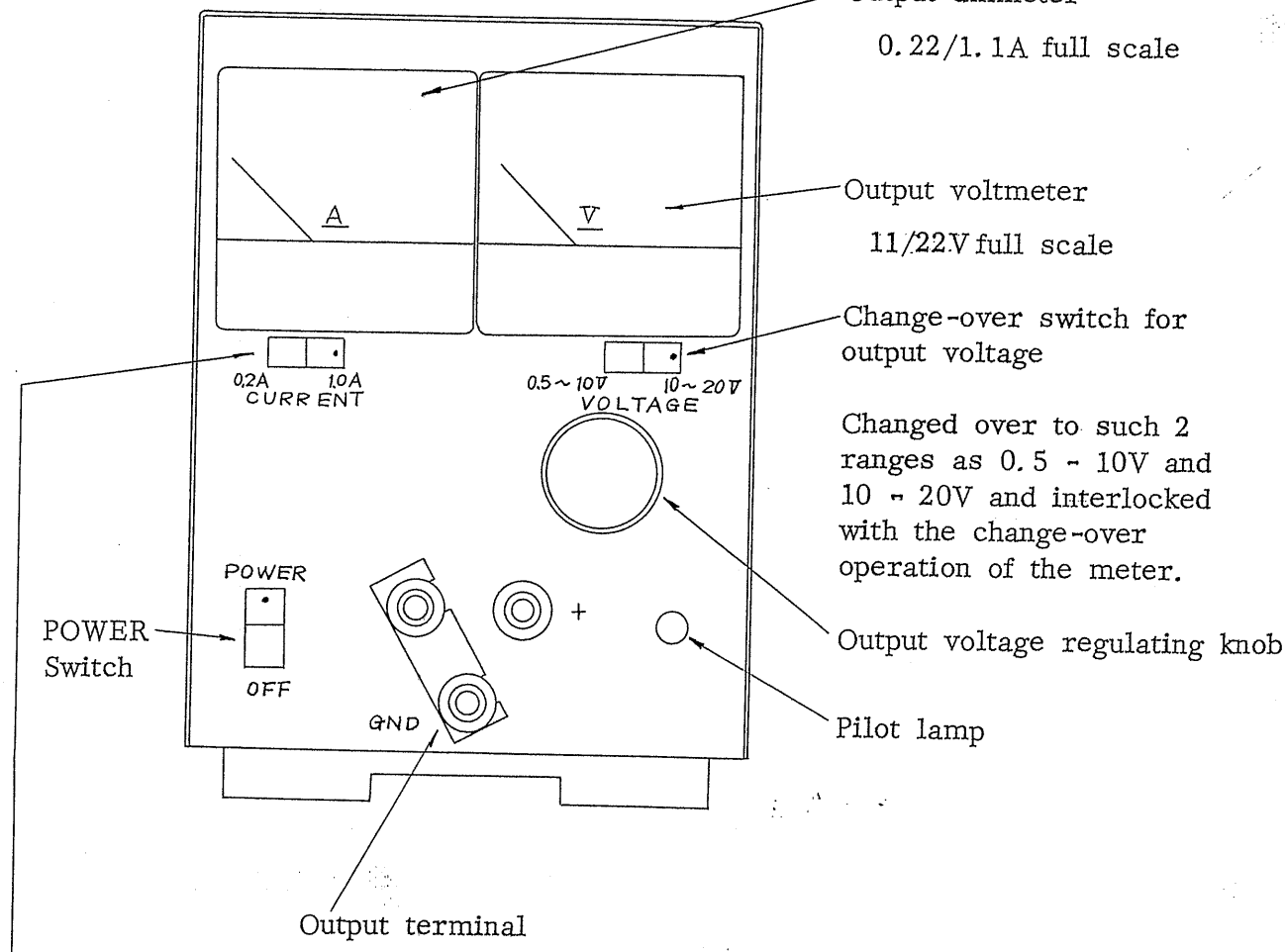
NOTES

* 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.

This switch changes over the ranges of 0.22/1.1A 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 40°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 (1A) 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 (0.2 A or 1.0A), the output current limiting circuit with the fold back characteristics will

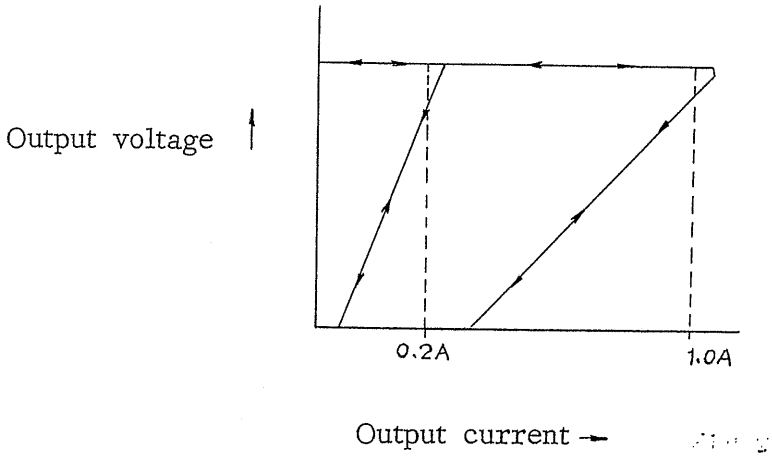
drop both output voltage and output current.

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

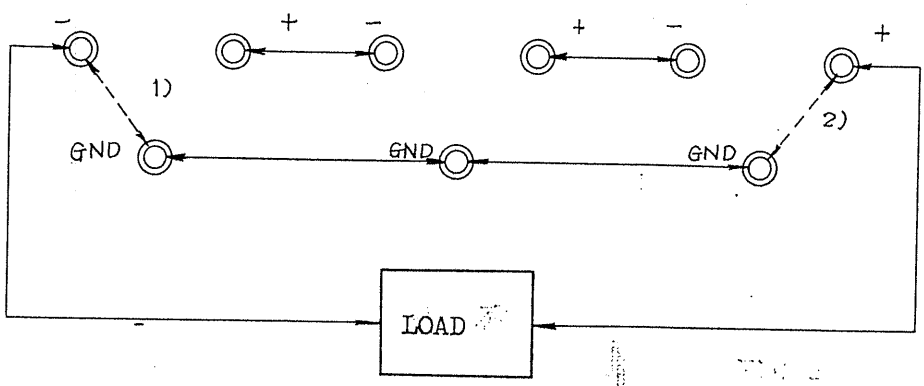


As this unit has been provided with the aforementioned output current limit circuit, it will function positively and safely even when the load is pure resistance or capacitive or lamp.

4. Overload Protection in Series Operation

Voltage of 20V or above is available by connecting more then 2 units of power supply in series. In this case, any of the terminals should not exceed ±100V against panel chassis. (Refer to Fig. 3 for connection procedure.)

FIG. 3

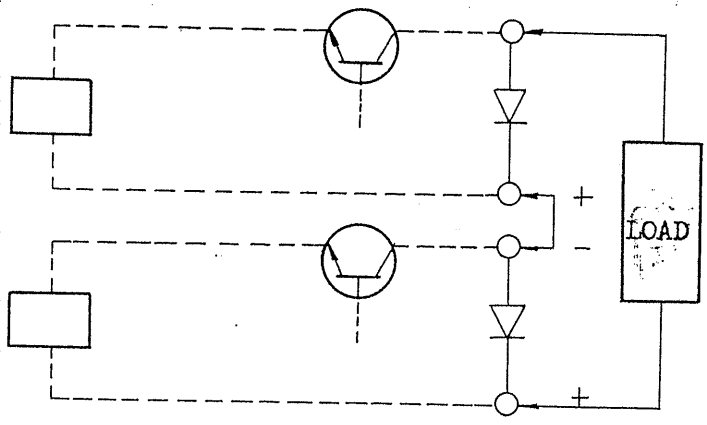


1) In the case of minus earthing

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



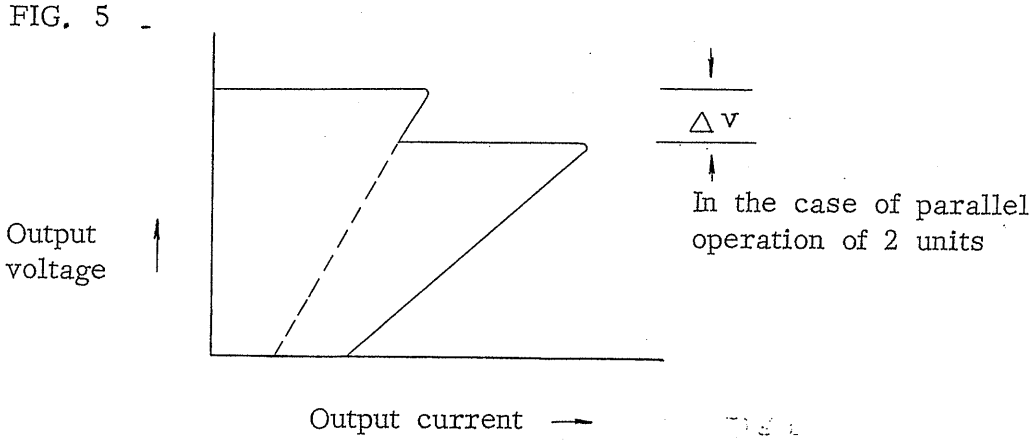
5. Parallel Operation

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 △V in output voltage is caused. Therefore, the output voltages of the both units must be near as possible.

FIG. 5



5.1 Master-and-slave parallel operation

A maximum output of 2 amperes can be obtained by connecting and operating two units of 7315A as described below. In this operation, one of the two 7315A is employed as a master, and the other as a slave.

NOTE: Be sure to effect the connection of the two 7315A with their power switches turned off.

(1) Remove the cover of the slave unit, set from MASTER to SLAVE the slide switch located on the printed board, and replace the cover.

(2) Connect the parallel operation terminals J4 located on the rear of both units to each other with a wire.

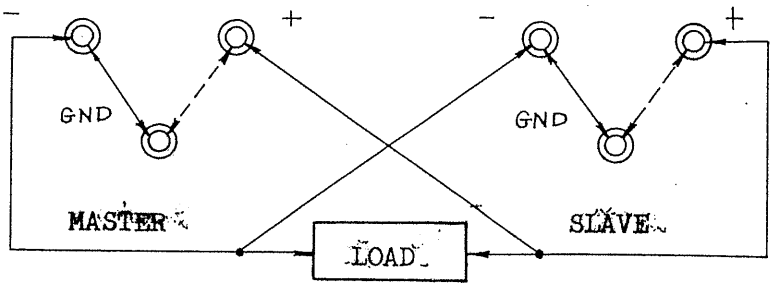


FIG. 6

(3) Set the current limiting switch of the slave unit to the 1-ampere range, the voltage control knob to the maximum value position (by turning the knob full clockwise), and the voltage range selecting switch to the same position as that of the master unit.

(4) The slave unit is controlled by the master unit. Current limiting circuits operate in 0.4/2.0 ampere steps.

NOTE: Up to two units of the 7315A can be operated in parallel at the same time; up to five units in series. Avoid operating different models in parallel.

CAUTION: Do not ground both units for different polarities from each other.

6. Maintenance

When a faulty part has been replaced or the output voltage deviates, adjust the 7315A as follows:

6.1 Adjustment of 20.5-volt voltage

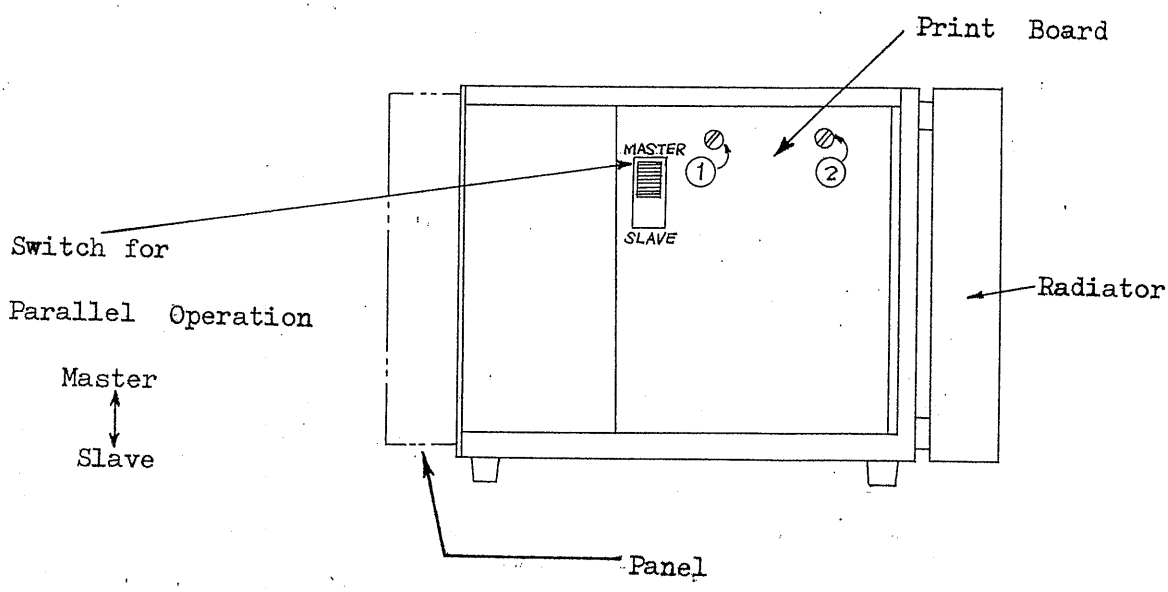
Set the voltage range switch to the 10 - 20V range, and turn the voltage control knob full clockwise to the maximum voltage position. Adjust the semifixed resistor (① in Fig. 7) on the printed board for a meter reading of 20.5V.

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. 7) on the printed board for a meter reading of 0V.

Repeat the above adjustments several times.

FIG. 7


Print Board
MASTER
SLAVE
1
2
Switch for
Parallel Operation
Master
Slave
Radiator
Panel