

MODEL 7212
REGULATED DC POWER SUPPLY.

OPERATION MANUAL

KIKUSUI ELECTRONICS CORP.

70.7.20

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.



1. INTRODUCTION

Model 7212 is a transistorized series-type regulated dc power supply with two independent power units in a single enclosure. Both these units are continuously variable in a voltage range of 0 to 15V, and an output current of 0.1A is used.

It is a small-sized lightweight power supply with 2 voltmeters on its front panel.

Being an automatically restorable device with a steadily working constant-current type current limit circuit to deal with overload or output shorting, it automatically reverts to constant voltage operation once the overload or short circuit condition is removed. It won't be damaged even if an overvoltage is applied to the output terminals.

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2. SPECIFICATIONS

Power supply	AC _____V 50/60 Hz
Power consumption (At 15V/0.1A full load for each unit)	Approx. 10 VA
Ambient temperature	Max. 40°C
Dimensions	106mm (W) × 145mm (H) × 150mm (D)
(Max.)	111mm (W) × 158mm (H) × 205mm (D)
Weight	Approx. 2 kg
Accessories	Operation Manual 1
Output (both units)	
Terminals	Distinctively colored --- red and white. Distanced 19mm. Horizontal terminal arrangement. GND terminal.
Polarity	Positive or negative
Floating voltage	Max. ± 100V
Voltage	Continuously variable 0 to 15V
Current	0.1A
Ripple	2mV rms
Regulation	20mV against fluctuation of ± 10% in power voltage. * 30mV against fluctuation of 0 to 100% in load.
Current limit	Constant-current automatically restorable current limit circuit
Protection against overvoltage	Operates safely even if positive

overvoltage is applied to output terminals. Max. 500V.

Alarm lamp lights when voltage close to 100V is applied.

Voltmeter 16V

Accuracy (2.5% of full scale) +0.2V

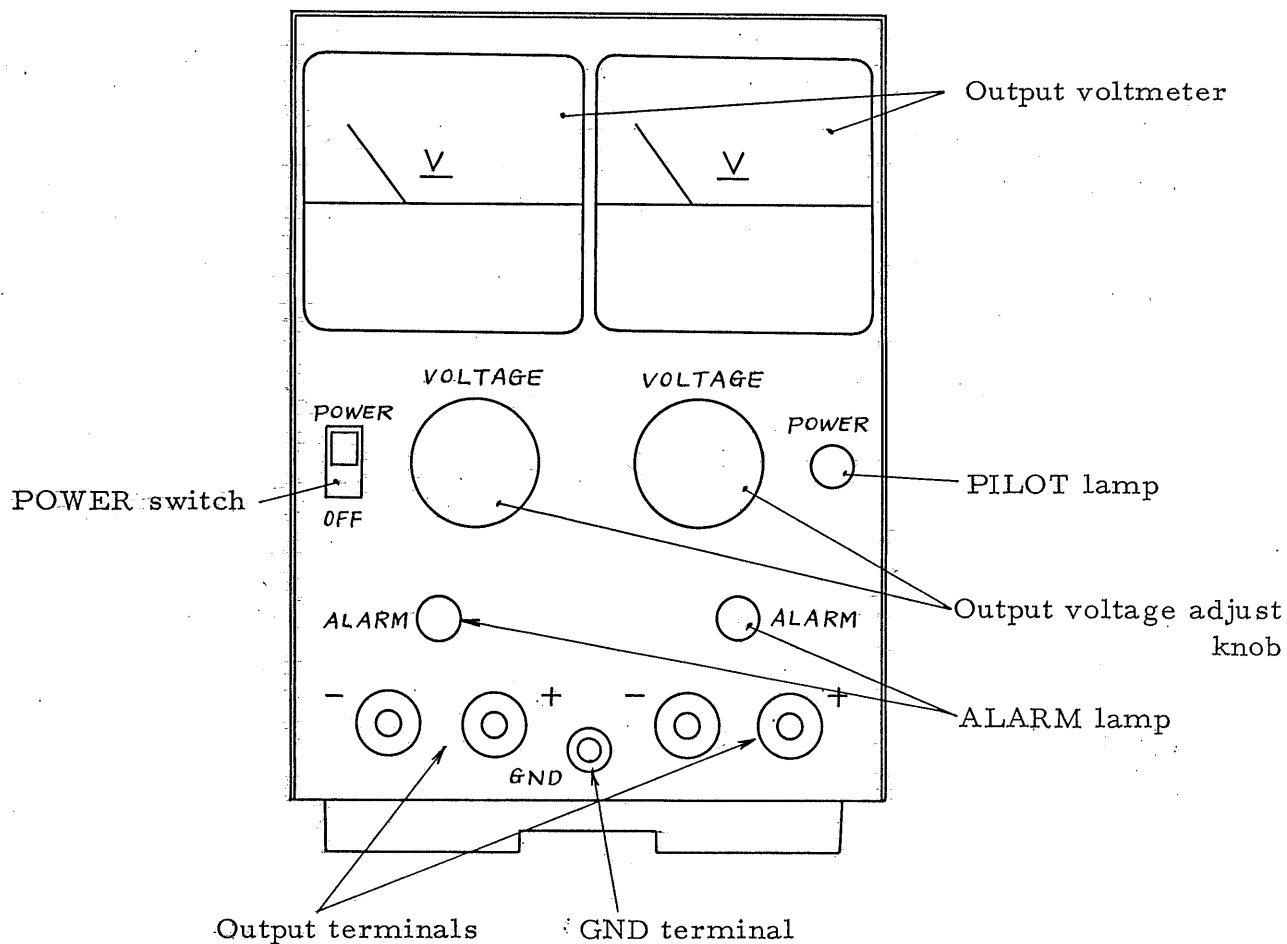
Operation

Parallel and series operation in addition to single operation as output is separately built in.

- * Including no voltage drop caused by silicon diode for protection against overvoltage. Testing should be conducted on a printed-circuit board.

3. EXPLANATION OF FRONT PANEL

3.1 Explanation of front panel



POWER switch

ON-OFF switch for the equipment. Once this switch is ON, the PILOT lamp lights to indicate it is in operation.

ALARM lamp

Lights if positive overvoltage is applied between output terminals. Lights when the voltage reaches approximately 100V. The maximum voltage is 500V.

Output voltage adjust knob

For adjusting output voltage, which is variable from 0 to 15V. Voltage is read from the output voltmeter at the top, and output is led from output terminals at the bottom.

4. OPERATION

Output terminals

Usually a "+" or "-" terminal should be connected by a lead wire to the GND terminal which is electrically linked to the chassis & panel. The output terminals may also be used under a DC bias of up to $\pm 100V$.

Instructions on operation:

4.1 Instructions on installation

Avoid using the power supply, whenever possible, at a place with an ambient temperature of over $40^{\circ}C$. Control the maximum continuous output current (0.1A) appropriately if ventilation is obstructed or the power supply is exposed to direct sunlight or other heat source.

The power voltage range for safe operation is rated voltage $\pm 10\%$.

4.2 Output voltage overshoot

Voltage between output terminals never exceeds the preset value when the power is turned on or off.

4.3 Current limit circuit

The power supply is equipped with a steady electronically-working output current limit circuit to prevent the flow of an output exceeding the rated level. Thus damage to series control elements may be prevented in the event of either shorting caused by wrong connection to terminals or an overload.

Once the voltage falls below the rated value, the power supply

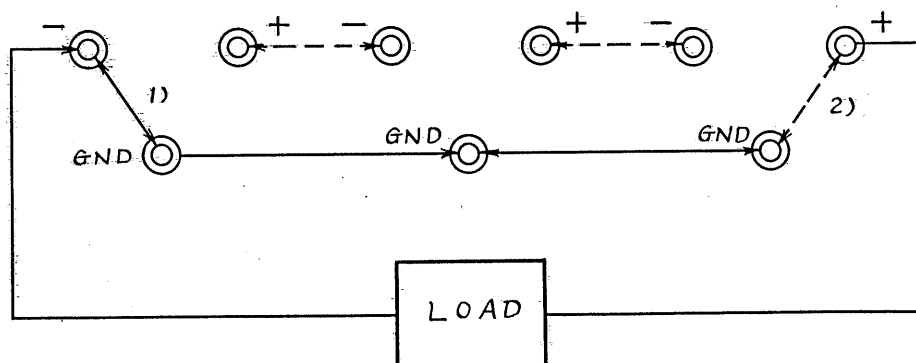
resumes its operation automatically and continuously as a constant voltage power supply.

With its constant-current type current limit circuit, it may also be used as a constant-current power supply.

4.4 Series operation

A voltage of 15V or more can be applied by connecting, in series, two or more Model 7212's. In that case, voltage at any terminal must be within $\pm 100V$ with respect to the panel and chassis.

(See Fig. 2 for connection.)



1) Negative grounding

2) Positive grounding

4.5 Protection against overload during series operation

If overload is applied as a result of series operation of two or more units, inverted voltage is applied to the unit whose circuit for overload protection works prior to the one on any other unit.

To prevent this, a diode is provided between each pair of output terminals.

Even if voltage is applied to an output terminal in the reverse direction, the current is bypassed by this diode to assure

safe operation of the equipment.

4.6 Parallel operation

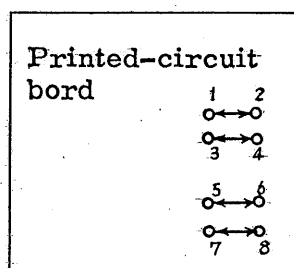
An output current for more than one Model 7212 can be obtained by connecting in parallel the output terminals of two or more units. The scope of use, however, is limited as differences in output voltage result in graduated output characteristics.

~~Minimize any such differences in output voltage.~~

4.7 When a higher degree of regulation is required.

The degree of regulation is lowered by a silicon diode connected to the positive output side of the power supply to prevent any trouble due to overvoltage. If greater regulation is required, line regulation can be limited to 20mV, and load regulation to 30mV by making the connection shown below.

However, no protection can be provided against overvoltage this way.



Short 1 and 2, 3 and 4, 5 and 6, and 7 and 8 on the printed-circuit board.

Fig. 3

5. MAINTENANCE

Should parts be replaced or output voltage be deviated due to malfunction or some other cause, make the following adjustments.

16V ADJ

Adjust the semi-fixed resistor on the back of the marked ~~to~~ HIGH ADJ on the printed-circuit board so that the output voltage reaches 16V when the output voltage adjust knob is set to the maximum position.

0V ADJ

Adjust the semi-fixed resistor on the back of the marked LOW ADJ on the printed-circuit board so that the output voltage becomes 0V with the voltage adjust knob set to the minimum position.

Repeat the above adjustment procedure a few times.