

MODEL 7337

REGULATED VARIABLE DC POWER SUPPLY

INSTRUCTION MANUAL

KIKUSUI ELECTRONICS CORPORATION

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## SUMMARY

KIKUSUI ELECTRONICS' MODEL 7337 is a transistorized regulated DC power supply, provided with a knob that enables to continuously vary 0 ~ 50V in one range and another knob to finely adjust  $\pm 1V$ , and allows to utilize the output current of 5A maximum and to limit the current to 1, 1.5, 2, 3 and 5 (A). Also, this instrument is furnished with a large size voltmeter and ammeter for ensuring the safe operation even against an output shortcircuit and non-linear load.

Furthermore, this instrument enables the series and parallel operation as well as the remote control.

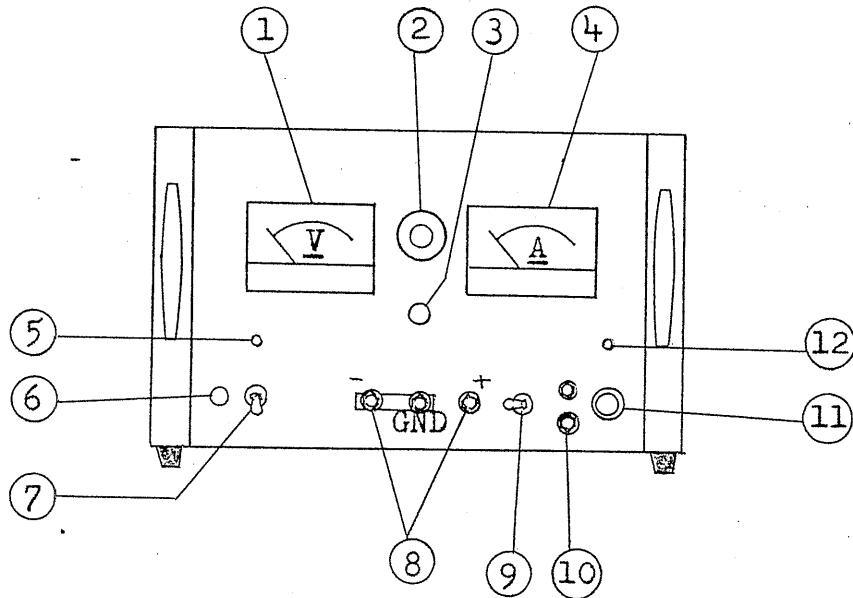
## TEMPORARY SPECIFICATIONS

<u>External Dimensions</u>	430W x 256H x 350D	mm
(Maximum)	(436W x 269H x 430D)	mm
<u>Weight</u>	Approx. 26 Kg	
<u>Power Supply</u>	100V 50/60 Hz Full load Approx. 700VA	
<u>Ambient Temperature</u>	40°C maximum	
<u>Output Voltage</u>	0 ~ 50V 1 range continuously variable	
<u>Output Current</u>	0 ~ 5A	
<u>Voltage Stability</u>	Power supply variation <sup>(1)</sup>	$\pm(0.01\% + 1mV)$
	Load variation <sup>(2)</sup>	$(0.01\% + 2mV)$
<u>Ripple</u>	1mV r.m.s	
<u>Operation</u>	Single, series, parallel and remote-control operations are possible.	
<u>Voltmeter</u>	Class 2.5	Full scale 50V
<u>Ammeter</u>	Class 2.5	Full scale 5.5A
<u>Accessories</u>	Short bar (long)	1
	Instruction manual & test data	1 each

(1) to  $\pm 10\%$  fluctuation of the power supply voltage

(2) to 0 ~ 100% variation of the load

EXPLANATIONS OF PANEL FURNISHINGS (1)

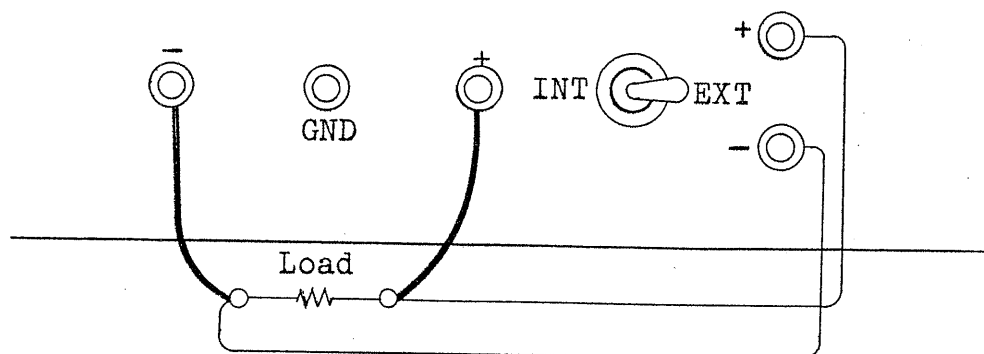


- ① Voltmeter of 50V full scale Class 2.5
- ② Output voltage adjusting knob that continuously varies 0 ~ 50V in the manner of raising the voltage by the clockwise rotation thereof
- ③ Fine adjusting knob for ② , enabling to vary  $\pm 1V$
- ④ Ammeter of 5.5A full scale Class 2.5
- ⑤ Power supply pilot lamp
- ⑥ Fuse of 5A delayed action type inserted in the input circuit (5.5A quick blow type fuse inserted in the output circuit is found on the right side of the back terminals)

## EXPLANATIONS OF PANEL FURNISHINGS (2)

- ⑦ Power supply switch. When this switch is turned to ON side, the power is supplied and the power supply pilot lamp is lighted.
- ⑧ Output terminals, which are used ordinarily in the method that either plus or minus terminal of them is connected by the accessory short bar with GND terminal that is electrically connected to the chassis/panel, but can also be operated by applying DC bias lower than  $\pm 100V$ .
- ⑨ This shall be used ordinarily in the position turned surely to the left side (INT). In this instance, the SAMPLING terminals are connected internally with the output terminal. In case of the SAMPLING terminals to be used, turn it to the right side (EXT).
- ⑩ SAMPLING terminals shall be used in case that the load current is large and the lead from the output terminal to the load becomes long, thus making it impossible to neglect the voltage drop. In such a case, the switch shall be turned to the EXT side.

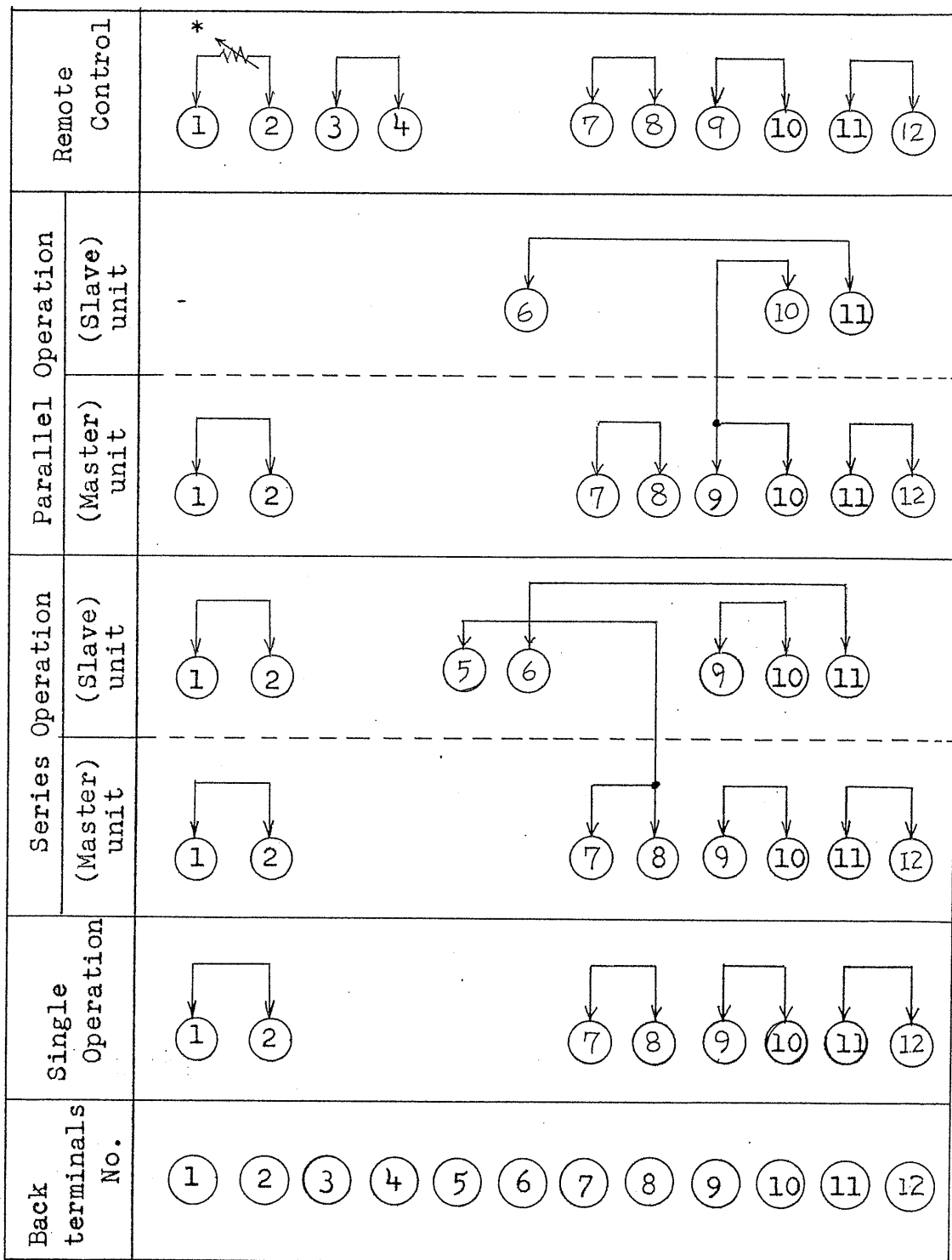
Example of using SAMPLING terminals



EXPLANATIONS OF PANEL FURNISHINGS (3)

- ⑪ Knob for selecting a setting value for current limitation, enabling to set to 1, 1.5, 2, 3 or 5 (A).
- ⑫ Overload alarm lamp that lights when a shortcircuit or load exceeding the preset value of current limitation is connected therewith.

### CONNECTION DIAGRAM OF BACK TERMINALS



\* RV approx. 200Ω/V (50V at 10K)



## METHOD OF OPERATION (1)

### Preparations

1. Make certain that the AC input voltage is within the prescribed range of  $100V \pm 10\%$ .
2. Be cautious that this instrument is situated under good ventilation and free from the radiation of the direct rays of the sun or other heat sources. (the ambient temperature to be lower than  $40^{\circ}C$ ) Also, avoid the use in the places of low temperature lower than  $0^{\circ}C$  or of much humidity or much dust.
3. In order to ensure the correct operation of this instrument, the terminals shall be connected correctly each other in compliance with the connection diagram of back terminals, depending upon the single, parallel or series operation. The terminals are provided at the back side of this instrument including the terminal Nos. 1 ~ 12\*. Also, be careful that the connecting operation of the terminals is to be performed in the state of the power supply switch turned to OFF position definitely.

### Single Operation

This is the ordinary method of use in that one set of this instrument is operated, and Page 8 herein shall be referred to as for the connecting method of the back terminals. And, the connection of this single operation is already wired at the time of delivery out of the factory.

### How to handle

1. The output voltage can be adjusted by ② and ③, and

## METHOD OF OPERATION (2)

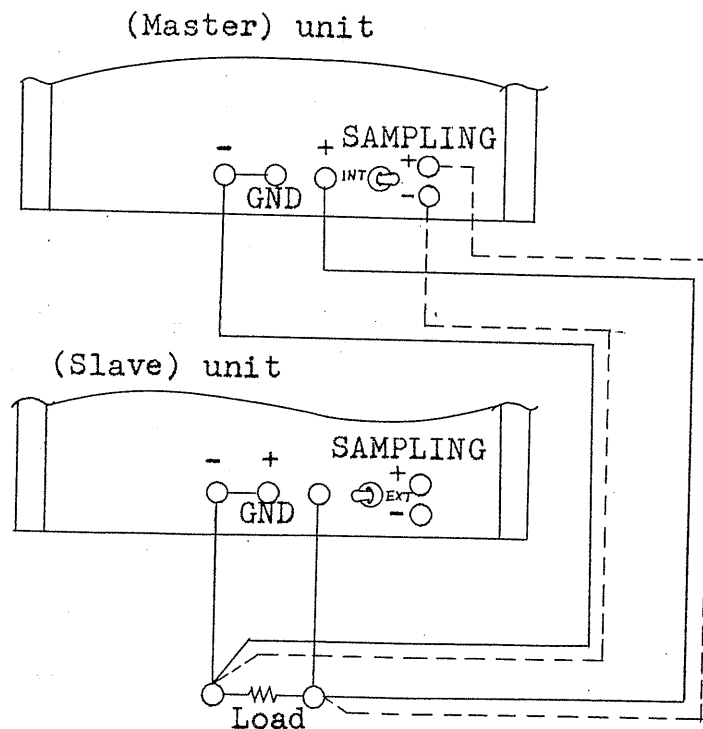
current limit can be set optionally to a position between 0.2 ~ 5A by means of (11) knob.

2. When a load exceeding the preset current limit value is connected thereto, the overload alarm lamp is lighted, and the output voltage and current are reduced. As soon as the load returns to the range of the current limit, the state is reset automatically.

\* Terminal No. 12 is not used ordinarily.

### Parallel Operation

In case of two sets parallel operation, the output terminals shall be connected as shown in the following diagram, and the back terminals be connected referring to Page 8.



## METHOD OF OPERATION (3)

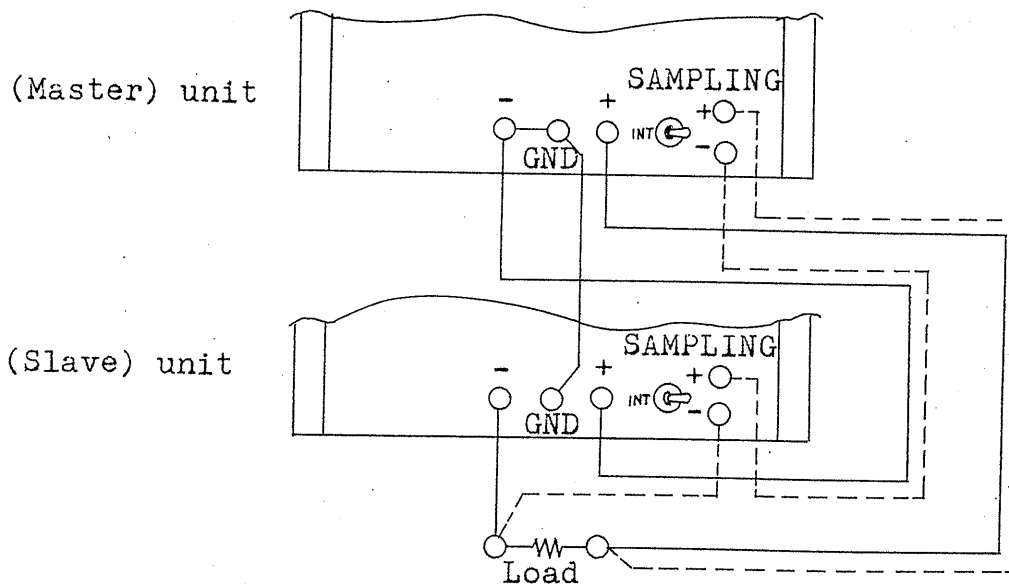
How to handle

1. Adjust the output voltage by means of the output voltage adjusting knobs (2) and (3) of the (master) unit, with the output voltage adjusting knobs of the (slave) unit rotated clockwise to the extreme.  
When the output voltage adjusting knobs of the (master) unit are rotated clockwise, the output voltage of the both units rises in an approximately equal proportion.
2. The current limit shall be set by the current limit selector switch of the (master) unit. The selector switch of the (slave) unit shall always be kept set to the same position as that of the (master) unit during the operation.
3. When such load is connected to the output voltage as to exceed the preset value of current limit, the overload alarm lamp of the (master) unit is lighted, and, if the preset value of current limit at the (slave) unit is smaller than that at the (master) unit, the lamp is lighted earlier, and, if the preset values are same, the lamps are lighted simultaneously.
4. The short bar shall be used so as to ground the minus or plus as for the both (master) unit and (slave) unit as shown in the diagrams in Page 10. But, be careful so as not to ground the different polarities as for the both units.
5. In case of parallel operation, the stability of the output voltage to load variation is approximately same with the stability at one unit for the same output current.

## METHOD OF OPERATION (4)

### Series Operation

In case of two units series operation, the output terminals shall be connected as shown in the following diagram, and the back terminals be connected referring to Page 8.



### How to handle

1. Adjust the output voltage by means of the output voltage adjusting knobs of the (master) unit, with the voltage adjusting knobs of the (slave) unit rotated clockwise to the extreme.

When the output voltage adjusting knobs of the (master) unit are rotated clockwise, the output voltage of the both units rises in an approximately equal proportion.

2. The current limit shall be set by the current limit selector switch of the (master) unit. The selector switch of the (slave) unit shall be set to 5A position for operation.

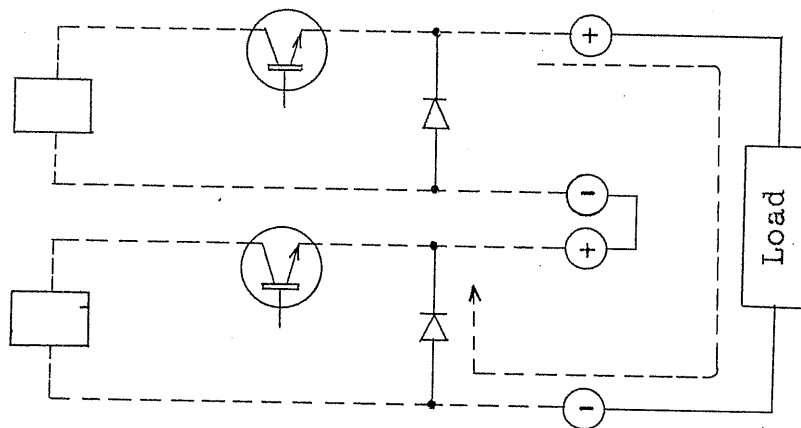
## METHOD OF OPERATION (5)

3. When such load is connected to the output voltage as to exceed the preset value of current limit, the overload alarm lamp provided on the panel of the (master) unit is lighted. Since the current limit of the (slave) unit is set to the maximum, the overload indication shall be confirmed by the lamp of the (master) unit.
4. The short bar shall be used so as to ground the (master) unit to the plus or minus, and the both grounding terminals shall be connected with a wire as short as possible.
5. In case of two units series operation, the output voltage fluctuation to load current variation is approximately twice as much as the fluctuation at one unit. If the sampling terminals are used as shown in the diagram in the page 12 at the time of load connection and the connection from the (master) unit to the (slave) unit, the fluctuation that may be caused by the voltage drop of the lead wire can be corrected.
6. It is possible to operate the two units only arranged in series.

### Reverse Voltage Protection in Series Operation

In case of more than two units in series operation having been overloaded, a reverse voltage is impressed upon the unit of which overload protective circuit operated first, thus causing damage to the series transistors. In order to prevent this, each output terminal is connected with a diode as shown in the following diagram.

## METHOD OF OPERATION (6)



(Practice under Patent No. 308280)

### Remote Control

In any case of single, series or parallel operation, this instrument can be operated under remote control. Connection diagram of back terminals in Page 8 shall be referred as to the connecting method.

How to handle for remote control

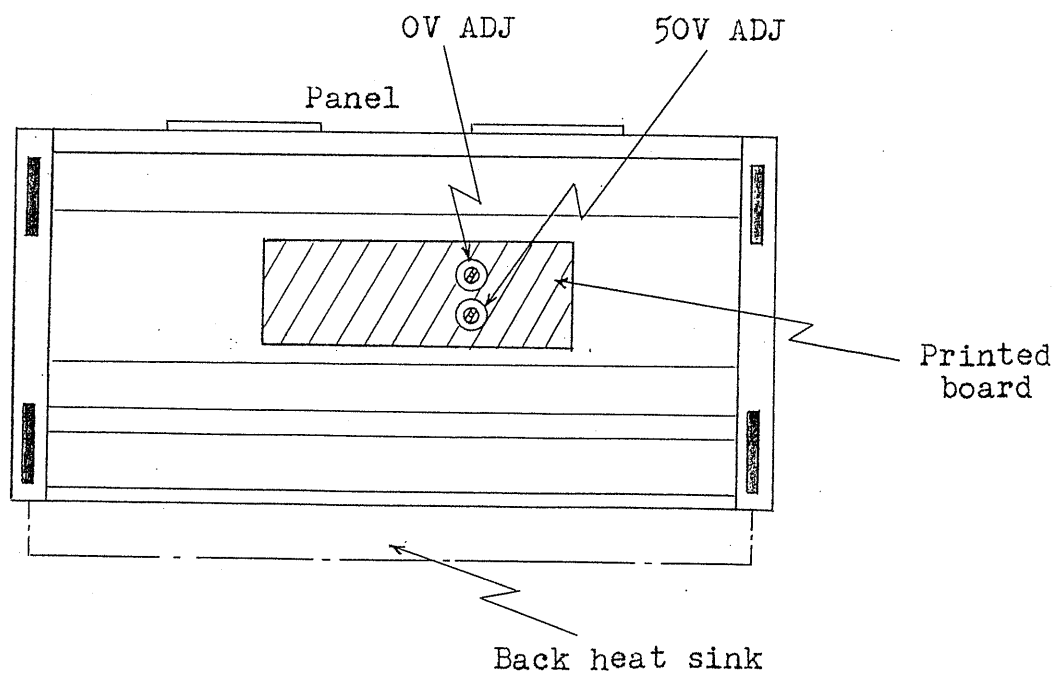
1. At the time of remote control, the output voltage adjusting knobs on the panel become impossible to control the output voltage, and the output voltage is controlled by an externally attached RV. The value of RV is  $10K\Omega$  at the time of 50V and is approximately  $200\Omega/V$ .
2. Also at the time of performing remote control for series and parallel operation, externally attach the RV to the back terminals ① and ② of the (master) unit just as in the case of single operation, and control the output voltage. As for the other various operations and running states, those pages that described the respective operating methods shall be referred.

## ADJUSTMENT

### 0V, 50V ADJ (Adjustment)

Adjust the variable resistors shown in the following diagram so that the output voltage becomes 50V and 0V when the COARSE knob is set to the maximum position (the position rotated clockwise to the extreme) and to the minimum position. The adjustments of the both exert their influence upon each other, so that this adjustment shall be repeated several times at the two points of 50V and 0V. And, during the time of adjustment, the FINE knob shall be kept set approximately to the center position.

Viewed from the back



BLOCK DIAGRAM

