OPERATION MANUAL

REGULATED DC POWER SUPPLY

PWB15-0.1

KIKUSUI ELECTRONICS CORPORATION

On Power Supply Source, it is requested to replace the related places in the instruction manual with the following items.

(Please apply the item of ☐ mark.)

☐ Power Supply Voltage: to _ _ _ _ _ V AC

☐ Line Fuse: to _ _ _ _ _ A

☐ Power Cable: to 3-core cable (See Fig. 1 for the colors.)

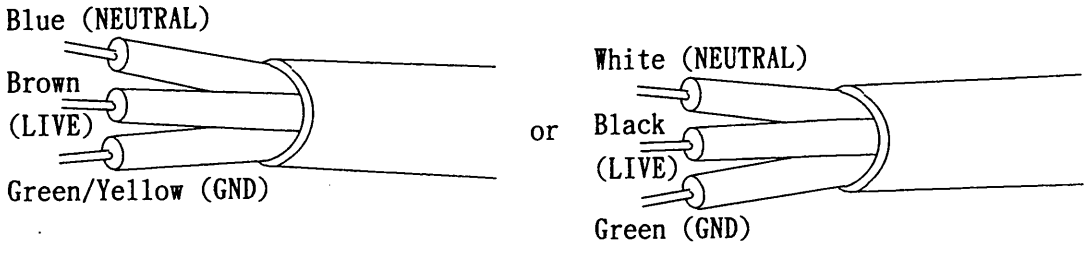


Fig. 1

Please be advised beforehand that the above matter may cause some alteration against explanation or circuit diagram in the instruction manual.

'90. 11. 14

* AC Plug: In case of Line Voltage 125V AC or more, AC Plug is in principle taken off and delivered, in view of the safety.
(AC Plug on 3-core cable is taken off in regardless of input voltages.)
TO connect the AC plug to the AC power cord, connect the respective pins of the AC plug to the respective core-wires (LIVE, NEUTRAL, and GND) of the AC power cord by referring to the color codes shown in Fig. 1.

Before using the instrument, it is requested to fix a suitable plug for the voltage used.

9051181

TABLE OF CONTENTS

PAGE

1. GENERAL 1

2. SPECIFICATIONS 2

3. DESCRIPTION OF PANEL 3

4. OPERATING METHOD 5

   1. Conditions of use 5

   2. Overshoots of output voltages 5

   3. Current limiting circuit 5

   4. Series operation 6

   5. Protection against overload when in series operation 6

   6. Parallel operation 6

5. MAINTENANCE 7

SHCEMATIC DIAGRAM

1. GENERAL

The PWB15-0.1 is a transistorized dual-channel series-type regulated power supply. The two channels are mutually independent and each of which provides an output voltage of 1 - 15 V, continuously variable, with a current rating of 0.1 A. Two voltmeters are provided on the front panel for respective channels. The equipment is compact and light.

The equipment incorporates a constant-current-type current limiting circuit which positively operates to protect the equipment against overload and output shorting. This circuit is an automatic reset type and, when the overload or output short state is eliminated, the equipment automatically resumes its regulated voltage operation.

2. SPECIFICATIONS

Model:	PWB15-0.1
Input voltage:	100 V ± 10%, 50/60 Hz AC
Power consumption:	Approx. 10 VA (when both channels full load with 15 V and 0.1 A)
Ambinet temperature:	40°C maximum
Dimensions:	84 W x 140 H x 149 D mm
(Maximum dimensions):	89 W x 148 H x 190 D mm
Weight:	Approx. 2.2 kg
Accessory:	Operation Manual (1 copy)

Outputs (both channels)

Terminals:	Binding posts (color coded red and white), GND terminal provided, 19-mm spacing
Polarity:	Positive and negative
Voltage with respect to ground:	±100 V maximum
Output voltage:	1 - 15 V, continuously variable
Output current:	0.1 A
Ripples:	2 mV rms
Stability:	20 mV per ±10% change of line voltage 30 mV per 0 - 100% change of load
Current limiting:	Constant-current-characteristic current limiting circuit of automatic reset type
Voltmeters:	16 V, JIS class 2.5, (two voltmeters)
Operation modes:	Single operation, parallel operation, and series operation are possible. (The two outputs are mutually independent.)

3. DESCRIPTION OF PANEL

3.1 Description of Panel Items

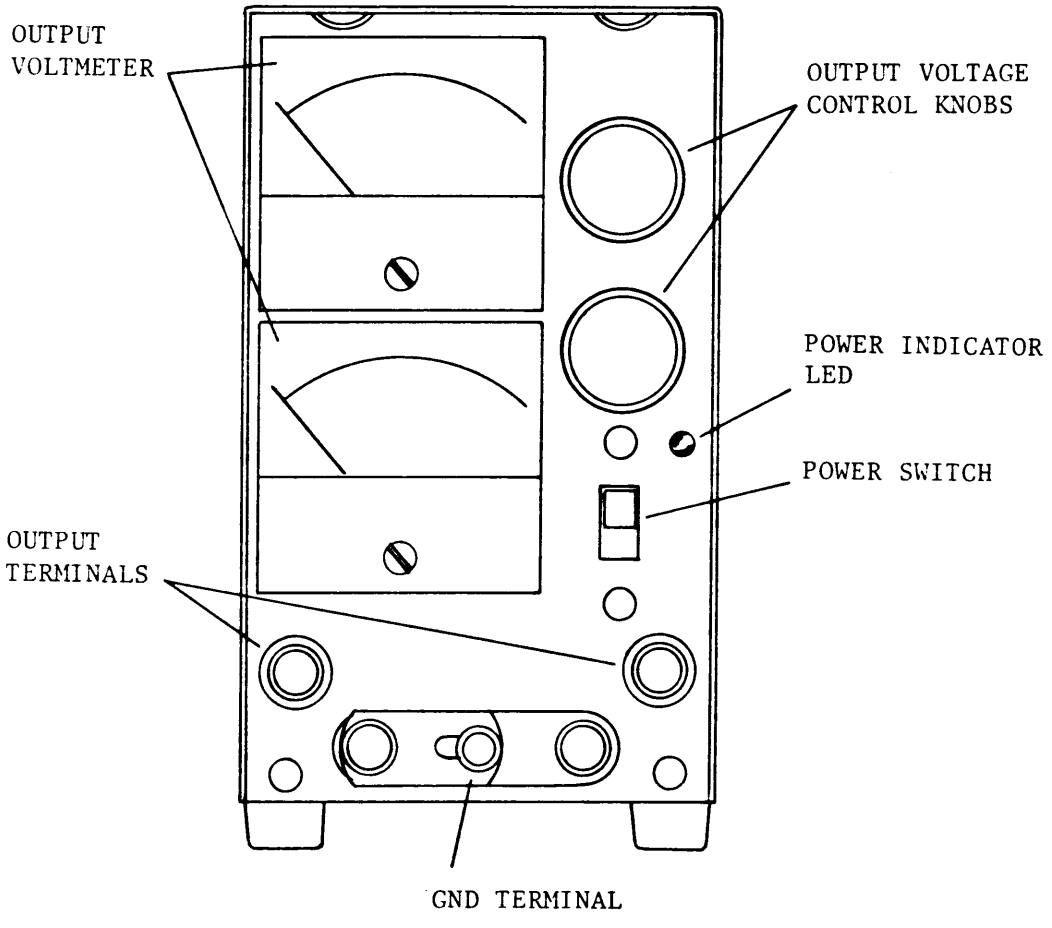


Figure 1

Power switch:

For ON-OFF control of the equipment input power. When the power switch is turned ON, the power indicator LED lights.

Output voltage control Knobs:

To adjust the output voltages for a range of 1 - 15 V, continuously variably. The voltages are indicated by the output voltmeters and delivered to the output terminals.

The upper knob is for the left-hand output terminals and the lower knob is for the right-hand output terminals.

Output terminals:

For regular type of use, the positive or negative terminal is connected using a lead wire to the GND terminal which is electrically connected to the equipment chassis. It also is possible, however, to use the equipment with a DC bias of ±100 V maximum.

4. OPERATION METHOD

Notes for Operation

1. Conditions of use:

Avoid operating the equipment in an ambient temperature of 40°C or over, so far as avoidable. When the place of use is not well ventilated or the equipment is exposed to direct sunlight or radiation from a source of heat, reduce the output currents to values lower than the maximum continuous output current rating (0.1 A).

The allowable AC line voltage range is 90 - 110% of the nominal voltage.

2. Overshoots of output voltages:

When the input power is turned on or off, no overshoot voltages higher than the set voltage is produced between output terminals.

3. Current limiting circuit:

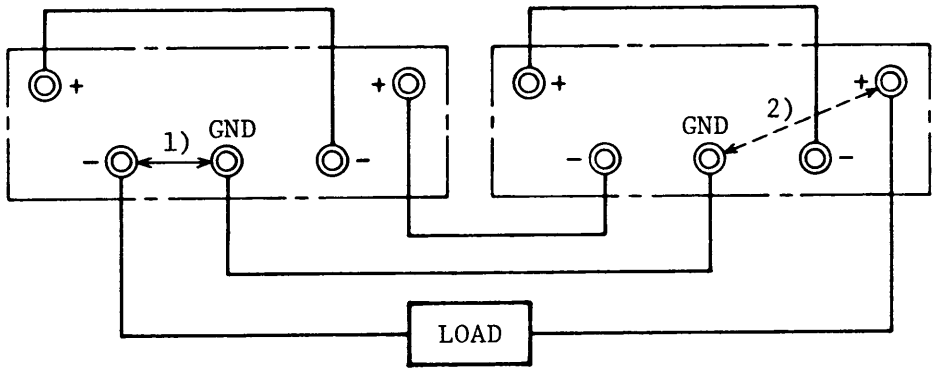
Thid equipment employs an electronic current limiting circuit which positively operates to limit the output current at a preset value in order to protect the series control elements when an overload is caused or the output circuit is shorted inadvertently.

When the output current is reduced to a value lower than the preset value, the regulated voltage mode resumes automatically.

This circuit also operates as a constant-current circuit and, therefore, the equipment can be used also as a constant-current source.

4. Series operation:

It also is possible to use two or more units of this equipment in series in order to obtain a voltage of higher than 15 V. When used in this mode, any terminal voltage must not be higher than ±100 V. (For connections, refer to Figure 2.)



1) For negative ground

2) For positive ground

Figure 2

5. Protection against overload when in series operation:

If an overload is caused when two or more units are operated in series, a reverse voltage is applied to the unit of which overload protection circuit has operated first. In order to guard against this, a diode is connected between output terminals.

This diode also protects the equipment by bypassing the current when a reverse voltage is applied.

6. Parallel operation:

It also is possible to use two or more units of equipment in parallel in order to obtain a larger output current. This mode of operation, however, is limited as stepwise output characteristics are caused due to difference in output voltage setting. Set the output voltages of different units as closely as possible.

5. MAINTENANCE

When the equipment has been repaired by replacing its components or when its output voltages have been shifted, adjust the equipment as explained in this section. (Of the printed board, the upper half is for output I and the lower half for output II.)

5.1 Adjustment of output voltages:

Connect a reliable voltmeter to the output terminals of this equipment, set the output voltage control dial so that the external voltmeter reads 15 V, and so adjust semi-fixed resistor VM of the printed board that the equipment output voltmeter reads 15 V.

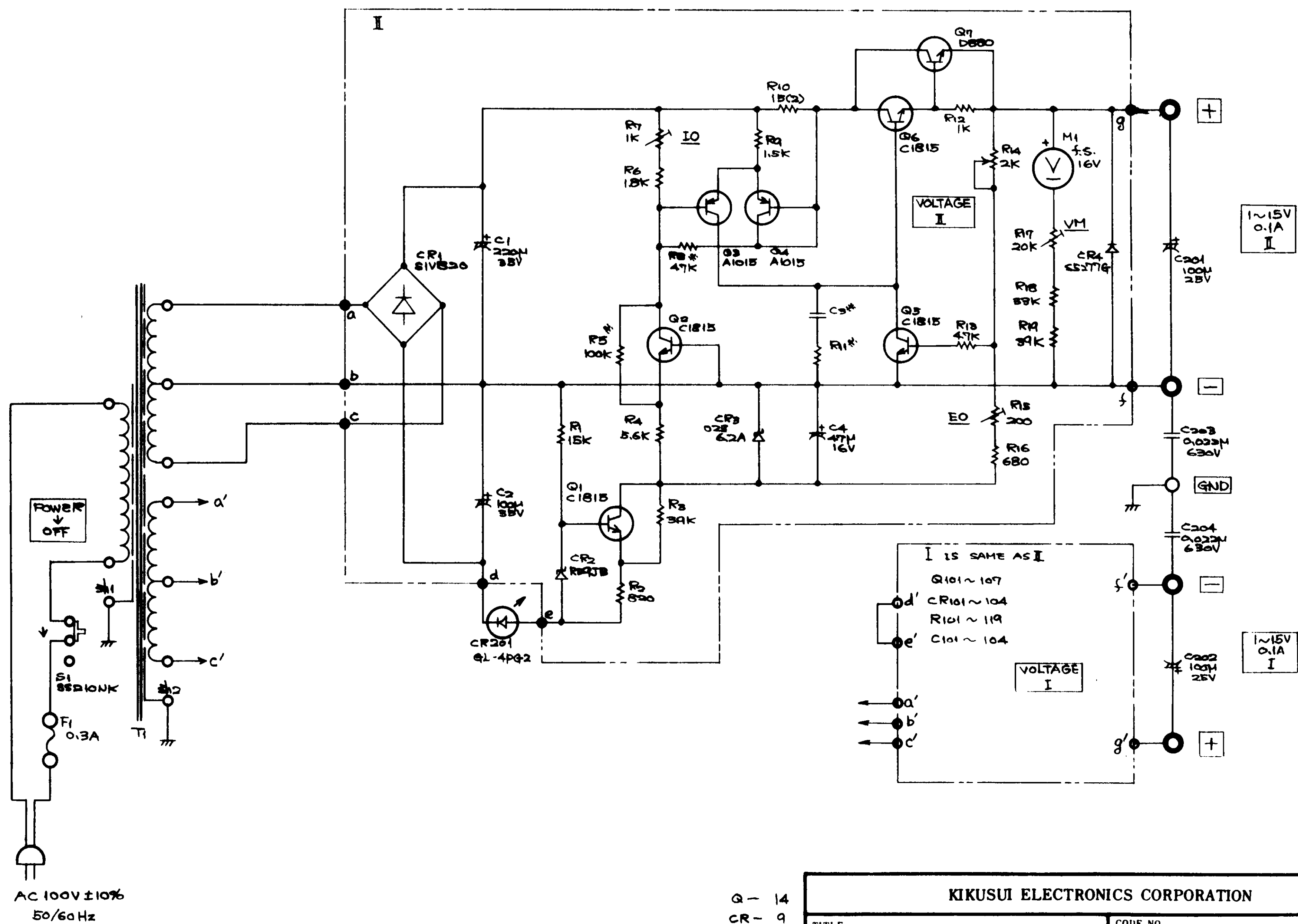
5.2 16 V ADJ:

Set the output voltage control dial in the maximum position and so adjust semi-fixed register VO of printed board that the output voltage becomes 16 V.

5.3 Adjustment of output current:

Connect a 100-ohm 2-watt resistor and an ammeter in series to the output terminals and gradually raise the output voltage from 1 V. So adjust semi-fixed registor IO of printed board that the current at the point where the voltage does not rise any longer becomes 0.12 A.

DRAWING NO 312097



Q - 14
CR - 9
R - 38
C - 12

KIKUSUI ELECTRONICS CORPORATION

TITLE	CODE NO.
MODEL PWB15-0.1 CIRCUIT DIAGRAM	DRAWING NO. 312097

DATE 79.8.24