INSTRUCTION MANUAL

ELECTRONIC LOAD

MODEL PLZ50-100A

KIKUSUI ELECTRONICS CORPORATION

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.

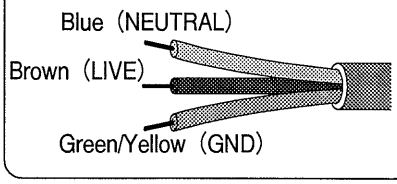
☐ AC power cable

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.

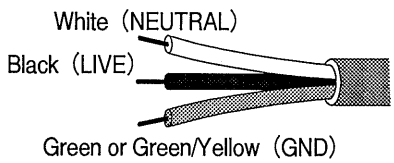
WARNING

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

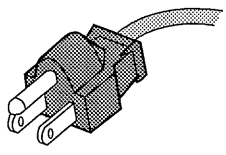
☐ Without a power plug



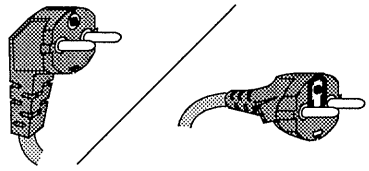
☐ Without a power plug



☐ 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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1. GENERAL

Model PLZ50-100A Electronic Load is a solid-state loading device which is able to operate either in the constant-current mode that the load current remains constant irrespective of input voltage change or in the constant-resistance mode that the load current is directly proportional to the loading voltage.

The loading voltage range is 0 V (zero volts) to 50 V. The load current setting range is from nearly 0 A (zero amperes) to 100 A maximum, which is divided into four subranges of 10 A and 100 A constant-current ranges and 0.02 Ω and 1.5 Ω constant-resistance ranges. The maximum wattage is 600 W.

The PLZ50-100A is incorporated with an overvoltage protector which is presettable to guard against loading overvoltage, an overpower protector to guard against loading overpower, a reverse-connection protector to guard against reverse-polarity of loading voltage, and an overheat protector to guard against overheating of the internal heat radiator. At the instant any one of these protective circuits trips, the loading circuit breaker trips to cut the input circuit.

2. SPECIFICATIONS

Name and Model:	Electronic Load, PLZ50-100A
Power requirements:	120 V ±10%, 50/60-Hz single-phase AC, approx. 90 VA
Dimensions:	430 W × 319 H × 400 D mm (16.93 W × 12.56 H × 15.75 D in.)
Dimensions including extrusions:	431 W × 360 H × 490 D mm (16.97 W × 14.17 H × 19.29 D in.)
Weight:	Approx. 45 kg (99 lbs)
Operating ambient temperature range:	0 to 40°C (32 to 104°F)
Accessory:	Instruction manual (1 copy)
Terminals:	Rear terminal blocks for both input and output
Grounding:	Positive ground or negative ground (with rear terminal block)
Withstanding voltage against ground:	±150 V
Cooling method:	Forced air cooling with fan
Loding voltage:	0 - 50 V
Loding current:	0 - 100 A
Loding power:	600 W

Operating modes

(1) Constant-current mode:
- o 0 - 100 A
- o External control voltage (maximum input: 6.2 V)

(2) Constant-resistance mode: Two ranges *
- Minimum 0.02 ohms
- Minimum 1.5 ohms

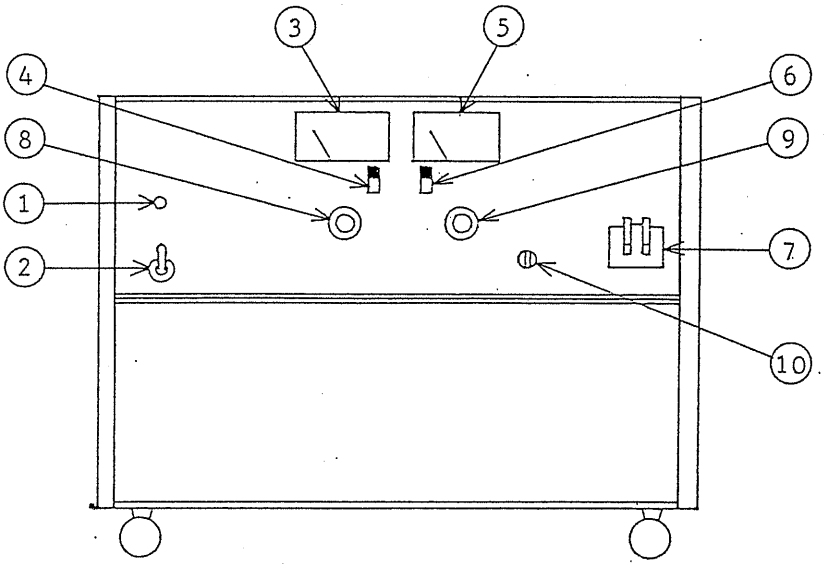
(*See page 9 Notes for Use in Constant-resistance Mode.)

Stability (constant current mode)

Source effect:	0.1% + 20 mA for ±10% change of AC line voltage
Load effect:	0.1% + 20 mA for 0 - 100% change of loading voltage
Ripple and noise:	0.2% + 100 mA rms (5 Hz - 1 MHz)
Protective circuits:	(1) Overvoltage protector (2) Overpower protector (3) Overheat protector (4) Reverse-polarity protector Input circuit breaker trips when any one of the above protective circuits has tripped.
Voltmeter:	DC, 60V/6V, F.S Class 2.5
Ammeter:	DC, 100A/10A, F.S Class 2.5

3. DESCRIPTION OF PANEL ITEMS

Front Panel



Rear Panel

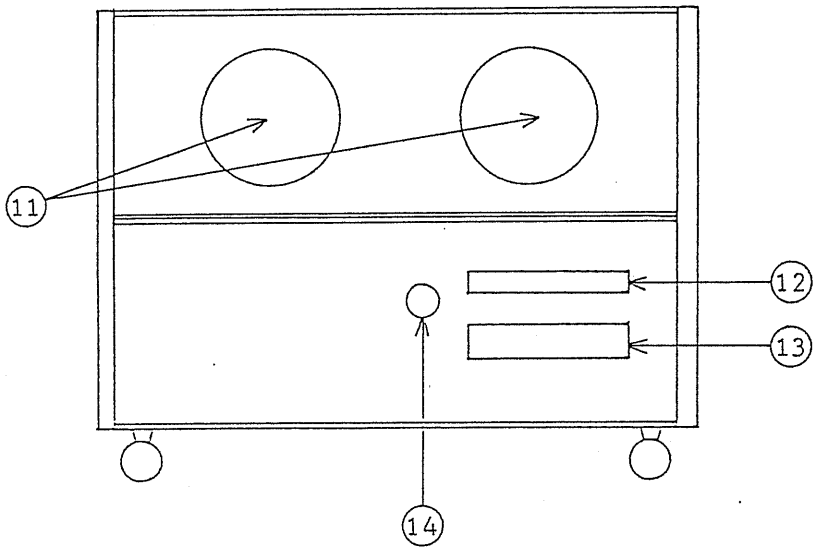


Figure 3-1

(1) Pilot lamp:

AC power pilot lamp (red LED). Turns on when power is ON.

(2) Power switch:

For ON/OFF-control of AC input power. Upper position is for ON.

(3) Ammeter:

Indicates the DC load current. 100 A/10 A full scale.

(4) Ammeter range selector switch:

Selects ammeter range between 100 A and 10 A. The upper position is for 100 A full scale and the lower position for 10 A full scale.

Precautions: Do not inadvertently change the switch to the 10A range when the setup is for the 100A range, lest the ammeter should be damaged.

(5) Voltmeter:

Indicates the DC input voltage. Even when the DC input switch is off, the voltmeter indicates the input voltage. The full scale is 60 V/6 V.

(6) Voltmeter range selector switch:

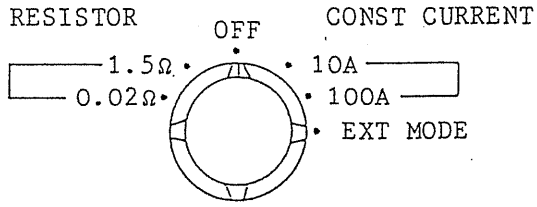
Selects the voltmeter range between 60 V full scale (upper position) and 6 V full scale (lower position).

Precautions: Do not inadvertently change the switch to the 6V range when the setup is for the 60V range, lest the voltmeter should be damaged.

(7) DC input switch:

When any one of the protective circuits has tripped, this switch (circuit breaker) cuts out the input circuit.

⑧ Function selector switch:



To select the functions of the electronic load. The center position is for off (no loading current). The right hand positions are for the 10A range and 100A range of constant-current mode and for the EXT mode (see page 9). The left hand positions are for the 1.5-ohm range and 0.02-ohm range of constant-resistance mode.

⑨ Load adjustment knobs:

To adjust the current or resistance setting. The outer knob is for coarse adjustment and the inner knob for fine adjustment. As the knobs are turned counterclockwise, the current increases or the resistance decreases.

⑩ Overvoltage setting potentiometer:

This potentiometer (screwdriver adjustment type) is to set the trip voltage for the overvoltage protector. The limit voltage becomes higher as this potentiometer is turned clockwise.

⑪ Fam exhaust area:

These are outlet holes for forced air cooling of the heat radiator. Do not impede the air flow of these holes especially when the electronic load is operating near its rated maximum power, lest the overheat protector should trip causing the circuit breaker to cut out.

⑫ Terminal block for special purposes:

These terminals are for special types of use of the electronic load. Normally, terminals 1 - 2, 3 - 4, and 7 - 8 are shorted.

⑬ Main terminal block

These terminals are for the DC input and AC input.

⑭ AC input fuse:

Fuse (10A) in the primary circuit of the AC input power line.

4. OPERATION

Constant Current Mode or Constant Resistance Mode

(1) Before connecting wires to the electronic load, set its switches and controls as follows:

②	OFF
④	100A
⑥	60V
⑦	OFF
⑧	OFF
⑨	Minimum (counterclockwise extreme position)
⑩	Maximum (clockwise extreme position)

(2) Connect an AC line power to the AC100V terminals of ⑬ main terminal block using the AC power cord. The AC line power should be 100 V ±10%, 50/60-Hz AC, current capacity 10 A or over.

(3) Connect the voltage or current source to be tested to the DC INPUT "+" and "-" terminals of the main terminal block. Two terminals of the terminal block are used for "+" and "-", and bars are installed. The voltmeter on the front panel will deflect as this connection is done.

(4) The maximum limit voltage of ⑩ overvoltage protector is approximately 60 V. To set the voltage at a lower voltage, throw ② and ⑦ to ON, and adjust so that the overvoltage protector trips and the circuit breaker cuts out at the required voltage.

(5) Set ⑧ switch to the required position.

(6) As you turn ⑨ outer switch clockwise, the current will start flowing and the ammeter will indicate the current.

The operating procedure is completed by the above.

To shut down the operation, before turning off the power switch, proceed in the order of ⑨ → ⑧ → ⑦ → ② and then return to the conditions of Step (1) above.

When drifts are undesirable, allow a stabilization period of approximately 15 minutes in the loading state of the setup.

External Voltage Control

The electronic load is designed so that its constant-current mode of operation can be remote-controlled. The maximum control voltage is 6.2 V.

(7) Set the switches and controls as in Step (1) above, except that ⑧ switch is set for the EXT mode.

(8) Connect the positive line (+) of the control voltage to terminal 5 of ⑫ terminal block and the negative line (-) to terminal 3. Set ⑨ knobs to the maximum state.

(9) By turning on ② switch and varying the control voltage 0 to 6.2 V, the constant-current setting can be remote-controlled for a range of 0 A to 100 A.

The operation procedure is completed by the above.

Precaution: Do not apply a control voltage of higher than 6.2 V, lest the electronic load should be damaged.

Notes for Use in Constant-resistance Mode

The electronic load cannot be used down to 0 V (zero volts) in the constant-resistance mode.

When the input voltage is very low, the resistance may increase. This is especially true with the 1.5-ohm range.

5. NOTES FOR USE

(1) To resume operation after one of the protectors has tripped and the input circuit is cut out by the circuit breaker, eliminate the cause of the trip and then turn on the circuit breaker. If operation is not resumed even when this is done, a probable cause is that the overheat protector has tripped. If this is the case, check that the fan is running normally, that the cooling air outlets are not blocked and that the equipment is fully cooled off, and then turn on the circuit breaker. When the overheat protector has tripped, operation cannot be resumed unless no-load operation is continued for about five minutes.

(2) Although the input voltage range of the electronic load is 0 - 5 V and the input current range is 0 - 100 A, the wattage (power consumption) is up to 600 W. Therefore, the available power range of the electronic load is limited by the following formula:

$$600\ (W) \geqq (\text{Input voltage V}) \times (\text{Input current A})$$

When the input voltage is 0 - 6 V, up to 100 A can be fed; with input voltage 10 V, up to 60 A; with input voltage 20 V, up to 30 A; with input voltage 50 V, up to 12 A as illustrated below. If the input power exceeds the shaded section of the illustration, the overpower protector trips and the circuit breaker cuts out the input circuit.

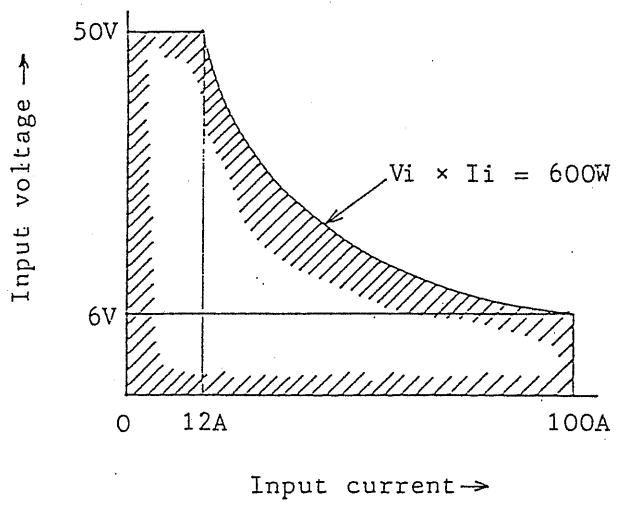


Figure 5-1