

MODEL 7314C  
REGULATED DC POWER SUPPLY  
INSTRUCTION MANUAL

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 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.



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## 1. GENERAL

The Model 7314C is an all-transistorized regulated DC power supply of series regulated type. Its output voltage is continuously variable from 1 V to 20 V in two ranges ( 1 V ~ 10 V / 10 V ~ 20 V ), and its maximum output current is 0.7A.

The Model 7314C is a compact and light-weight DC power supply which is employed a voltmeter and an ammeter on the front panel.

When overload condition occurs or the output terminals are accidentally shorted, the reliable and trouble-free output current limiting circuit operates. Model 7314C resumes its normal operation automatically and continuously at the removal of such overload or short-circuit condition.

It is possible to perform series operation of Model 7314C.

## 2. SPECIFICATIONS

Power Required	100V/ 110V/ 117V $\pm 10\%$ AC 50 or 60 Hz
	Full load approx. 37VA
Ambient Temperature	0 ~ 40 °C
Dimensions	106(W) x 145(H) x 151(D) mm
(-Max.)	111(W) x 158(H) x 206(D) mm
Weight	2.6 kg
Accessories	Short bar 1
	Instruction Manual 1

### OUTPUT

Terminals	Horizontally aligned at 19mm intervals. Classified by colors in red, white and black.
Polarity	Positive or negative
Floating voltage	Max. $\pm 100$ V
Output voltage	Continuously variable in two ranges 1 ~ 10 V/ 10 ~ 20 V
Output current	Max. 0.7 A
Ripple	1 mVrms
Regulation	Line regulation ( against $\pm 10\%$ fluctuation of input voltage) 10 mV
	Load regulation ( against 0 ~ 100% fluctuation of load ) 10 mV

Overload Protection	Automatic crossover current limiting circuit : Fold-back type
Voltmeter	22V/ 11V Accuracy: 2.5% of full scale
Ammeter	0.8 A Accuracy: 2.5% of full scale
Insulation	Chassis and Output terminal DC 250V more than 10M $\Omega$  Chassis and Line DC 500V more than 50M $\Omega$
Withstand Voltage	Chassis and Line AC 1000V 1 minute
Operation	Series operation is possible

\* Four units of Model 7314C can be mounted on a 19" or 500 mm standard rack.

### 3. EXPLANATION OF FRONT PANEL

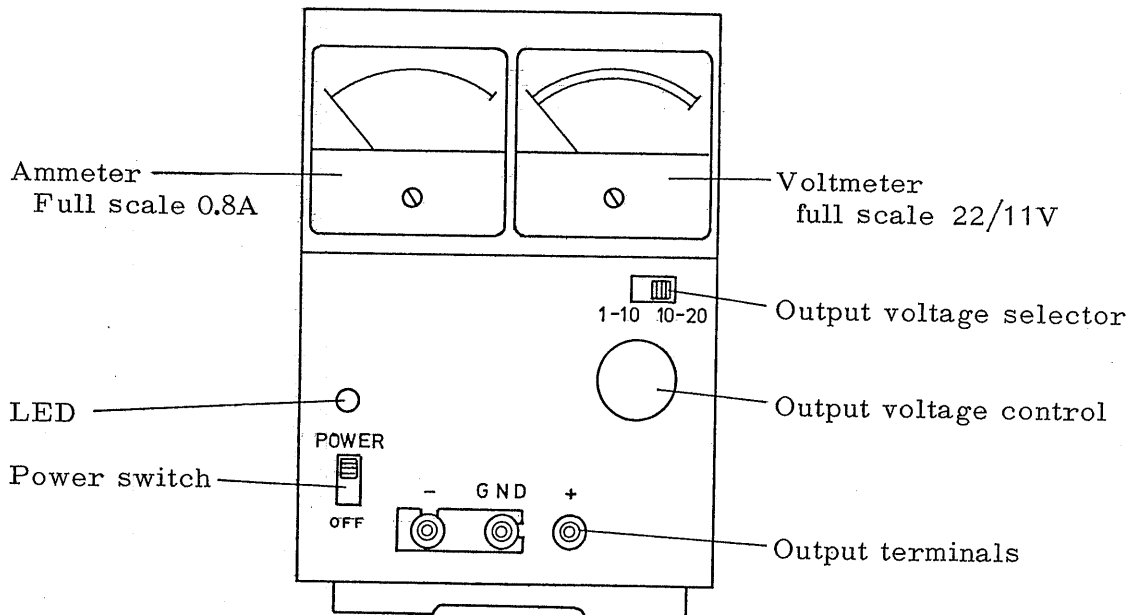


Fig. 1 Front Panel

#### Output terminals

Normally Model 7314C is used with negative terminal connected with GND terminal by means of accessory short bar.

#### Output voltage range selector

Switches output voltage to 1 ~ 10V or 10 ~ 20V.  
Voltmeter range is also changed with switching it.

## 4. OPERATION

### 4.1 Single Operation

Refer to ' 3. EXPLANATION OF FRONT PANEL ' ,  
when using a single Model 7314C.

### 4.2 Series Operation

It is possible to supply a higher output voltage than 20V by connecting more than two units of Model 7314C in series. In this case, floating voltage at any terminal must not exceed  $\pm 100V$  against the panel and chassis. ( See Fig. 2 for connection )

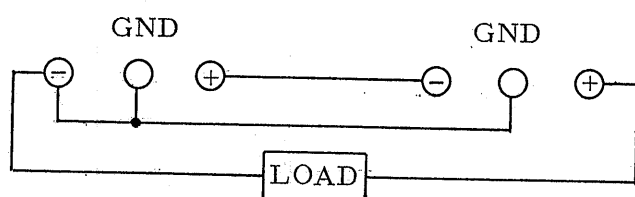


Fig. 2-a  
Case of negative grounding

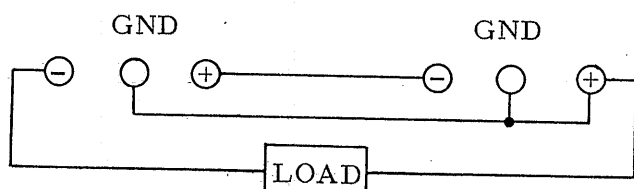


Fig. 2-b  
Case of positive grounding

When overload condition occurs in the operation of more than two units of Model 7314C connected in series, inverse voltage is applied to the unit of which overload protection circuit operated first. In order to prevent this, diodes are connected between the respective output terminals as shown in Fig. 3.

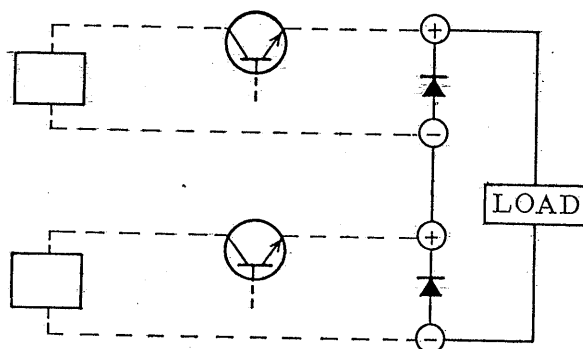


Fig. 3 Protection Circuit for series connection



#### 4.3 Parallel operation

It is possible to obtain greater output current than 0.7A by connecting the output terminals of more than two units of Model 7314C in parallel. However, the applicable range is limited due to its characteristics as shown in Fig. 4. In case of Fig. 4 there appears a step of  $\Delta V$  in the output voltage. Therefore the output voltage of both equipments must be adjusted to become as close to each other as possible.

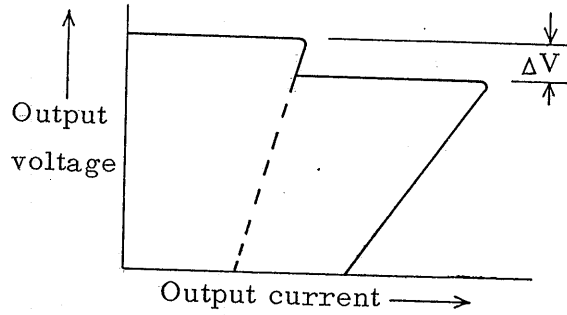


Fig. 4  
Two units parallel connection  
characteristic

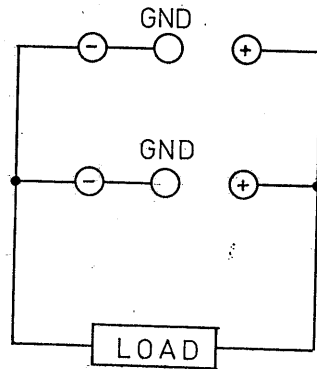


Fig. 5-a  
Parallel connection  
( negative ground )

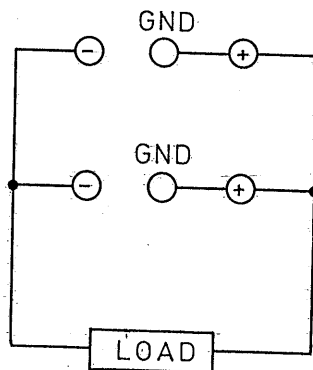


Fig. 5-b  
Parallel connection  
( positive ground )

#### 4.4 Caution for Installation

Avoid using Model 7314 C in a place where ambient temperature exceeds 40 °C. The maximum output current must be properly limited when the equipment is exposed to direct rays of the sun or radiation from any heat source.

The safety range of input line voltage for Model 7314C is from 90 to 100% of the rated voltage.

#### 4.5 Overshoot of Output Voltage

In Model 7314C its output voltage is prevented from increasing any further than the preset value when line power is turned on or off.

#### 4.6 Output Current Limiting Circuit

Model 7314C is provided with an electronic trouble-free current limiting circuit of fold-back type in order to protect series transistors and output ammeter as well as other component parts from damage when the output terminals are accidentally shorted.

When the load resumes the normal condition, the equipment restarts its voltage regulating operation automatically.

## 5. MAINTENANCE

When any defective component part is replaced and output voltage indication needs calibration, make readjustment in the following procedure.

### 1. Adjustment of voltmeter

Connect a voltmeter to output terminals, and set the output voltage to 20V. Adjust the semi-fixed resistor R15 in Fig. 6 so that an output voltmeter of the Model 7314C indicates 20V.

### 2. Adjustment of max. output voltage

Set the voltage range selector to the 10~20V range, and turn the output voltage control knob counterclockwise to its extreme position.

Then adjust the output voltage to 20.5V by turning the semi-fixed resistor R13 in Fig. 6 .

### 3. Adjustment of output current limiting circuit.

Connect a load to output terminals, and decrease the value of the load resistance. Adjust the semi-fixed resistor R6 in the Fig. 6 so that the indication of ammeter increases up to approximately 0.8A with decrease of the value of the load resistance, and then it decreases.

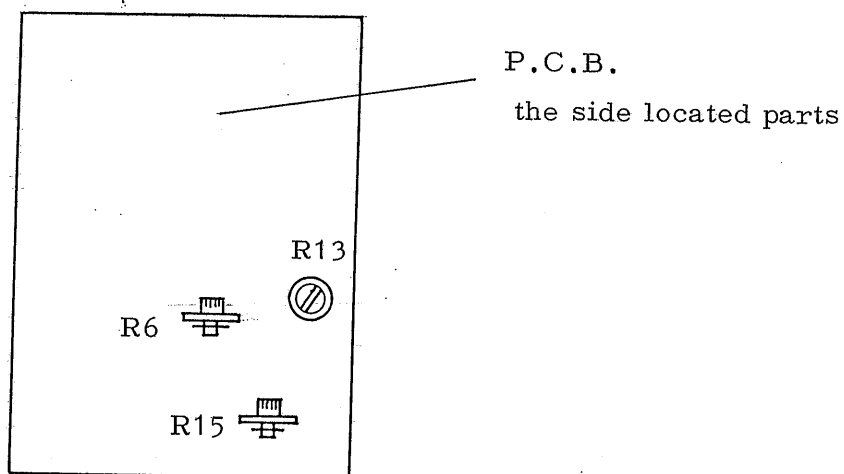


Fig. 6 The location of semi-fixed resistors

## 6. MOUNTING

### 6.1 Frame for Mounting ( Option )

The width of the front panel is  $1/4$  of the width of 19 inches or 500 mm standard rack. The four units of the Model 7314C can be mounted on a standard rack. The frame for mounting ( Model RMF-41 ) shown in Fig. 7 can be ordered.

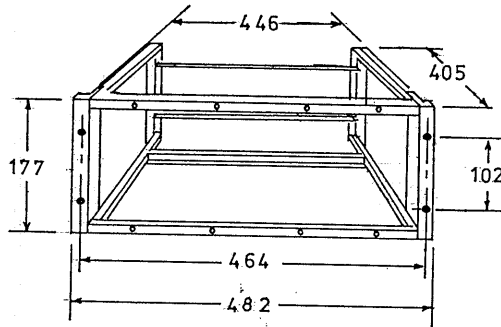
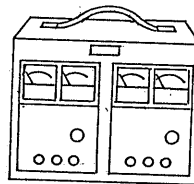


Fig. 7 Frame for mounting ( Model RMF-41 )

### 6.2 Combination

A combination of 2 or 4 units in a case can be supplied.

Model 7314C-21



Model 7314C-41

