R

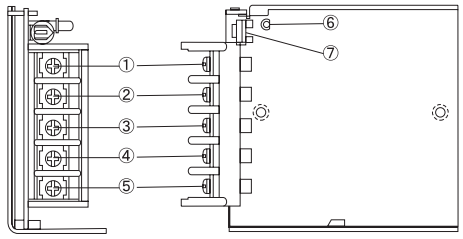
Basic Characteristics Data

Model	Circuit method	Switching frequency [kHz]	Input current [A]	Rated input fuse	Inrush current protection	PCB/Pattern			Series/Parallel operation availability	
						Material	Single sided	Double sided	Series operation	Parallel operation
R10A	Flyback converter	80 - 350	0.3	125V 2A	Resistor	CEM-3	Yes		Yes ✻1	✻1
R15A	Flyback converter	60 - 340	0.36	125V 2A	Thermistor	CEM-3	Yes		Yes	✻1
R25A	Flyback converter	70 - 290	0.6	125V 3A	Thermistor	CEM-3	Yes		Yes	✻1
R50A	Forward converter	200	1.1	125V 3A	Thermistor	CEM-3	Yes		Yes	✻1
R100U	Forward converter	160	2.8	125V 5A	SCR	CEM-3	Yes		Yes	✻1
R150U	Forward converter	160	4.2	125V 6.3A	SCR	CEM-3	Yes		Yes	✻1

✻1 Refer to Instruction Manual.
✻ Switching frequecy of flyback converter depends on input voltage and load factor.
✻ The value of input current is at ACIN 100V and rated load.

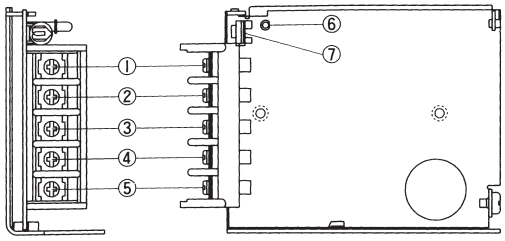
1 Terminal Block

●R10A



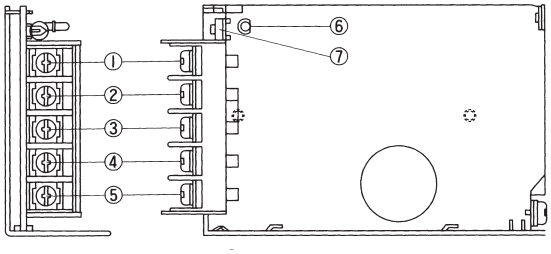
①+Output
②-Output
③Frame ground
④AC(L)
⑤AC(N)
⑥LED
⑦Output voltage adjustable potentiometer

●R15A



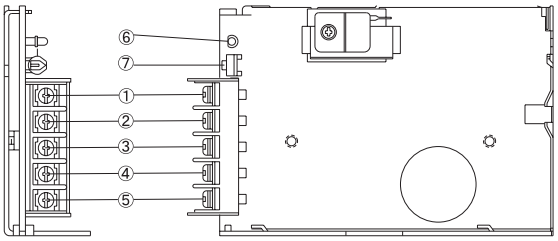
①+Output
②-Output
③Frame ground
④AC(L)
⑤AC(N)
⑥LED
⑦Output voltage adjustable potentiometer

●R25A



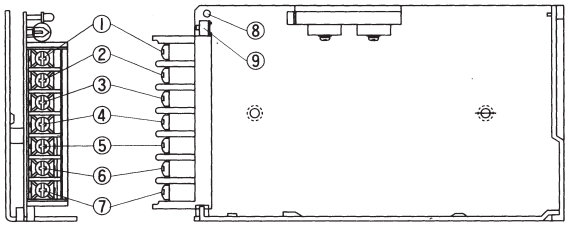
①+Output
②-Output
③Frame ground
④AC(L)
⑤AC(N)
⑥LED
⑦Output voltage adjustable potentiometer

●R50A



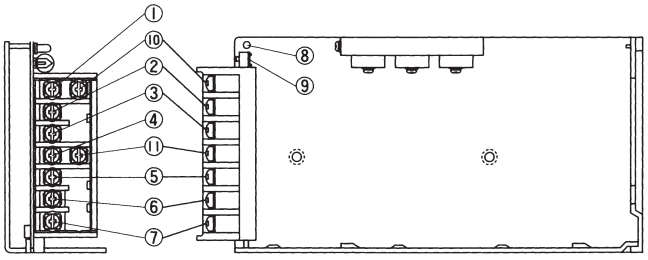
①+Output
②-Output
③Frame ground
④AC(L)
⑤AC(N)
⑥LED
⑦Output voltage adjustable potentiometer

●R100U



①+Remote sensing(+S)
②+V Output
③-V Output
④-Remote sensing(-S)
⑤Frame ground
⑥AC(L)
⑦AC(N)
⑧LED
⑨Output voltage adjustable potentiometer

●R150U



①②+V Output
③④-V Output
⑤Frame ground
⑥AC(L)
⑦AC(N)
⑧LED
⑨Output voltage adjustable potentiometer
⑩+Remote sensing(+S)
⑪-Remote sensing(-S)

2 Function

2.1 Input voltage range

■The range is from AC85V to AC132V or DC110V to DC170V.

■AC input voltage must have a range from AC85V to AC132V for normal operation. If the wrong input is applied, the unit will not operate properly and/or may be damaged.

■In cases that conform with safety standard, input voltage range is AC100-AC120V(50/60Hz).

2.2 Inrush current limiting

■Inrush current limiting is built-in.

■If a switch on the input side is installed, it has to be the one handling the input inrush current.

●R15A · R25A · R50A

■The thermistor is used for protection from inrush current. When power is turned ON/OFF repeatedly within a short period of time, it is necessary to have enough time for power supply to cool down.

●R100U · R150U

■The thyristor technique is used for protection from inrush current. When power is turned ON/OFF repeatedly within a short period of time, it is necessary to have enough time between power ON and OFF to operate resistance circuit for inrush current.

Table 2.1 Inrush current Unit:[Atyp]

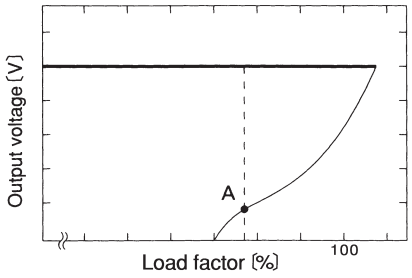
No.	Model	Inrush current	No.	Model	Inrush current
1	R10A	20	4	R50A	30
2	R15A	20	5	R100U	15
3	R25A	20	6	R150U	15

2.3 Overcurrent protection

■Overcurrent protection is built-in and comes into effect at over 105% of the rated current. Overcurrent protection prevents the unit from short circuit and overcurrent condition. The unit automatically recovers when the fault condition is cleared.

●R10A · R15A · R25A

■The power supply which has a current foldback characteristics may not start up when connected to nonlinear load such as lamp, motor or constant current load. See the characteristics below.



——: Load characteristics of power supply.

---------- : Characteristics of load (lamp, motor, constant current load, etc.).

Note: In case of nonlinear load, the output is locked out at A point.

Fig. 2.1 Current foldback characteristics

2.4 Overvoltage protection

●R10A · R15A

■Overvoltage protection circuit, clamping the output voltage by zener diode, is built-in and comes into effect at over 115% of the rated voltage. (For 3V type, overvoltage protection kicks in at over 4V.) The unit in an overvoltage protection mode cannot be recovered by a user; it must be repaired at the factory. Overvoltage protection (diode) also comes into effect if the voltage is externally applied to the output side. Avoid applying voltage to the output side.

●R25A · R50A · R100U · R150U

■The overvoltage protection circuit is built-in and comes into effect at 115 - 140% of the rated voltage. The AC input should be shut down if overvoltage protection is in operation. The minimum interval of AC recycling for recovery is 2 to 3 minutes.

✱ The recovery time varies depending on input voltage.

Remarks:

Please avoid applying the over-rated voltage to the output terminal. Power supply may operate incorrectly or fail.In case of operating a motor etc. , please install an external diode on the output terminal to protect the unit.

2.5 Output voltage adjustment range

■Adjustment of output voltage is possible by using potentiometer.

■Output voltage is increased by turning potentiometer clockwise and is decreased by turning potentiometer counterclockwise.

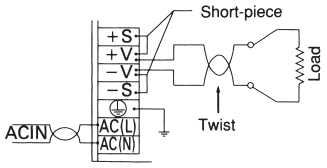
R

2.6 Remote sensing

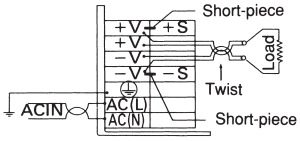
●R100U · R150U

(1) When not using remote sensing function

●R100U

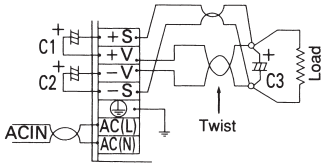


●R150U

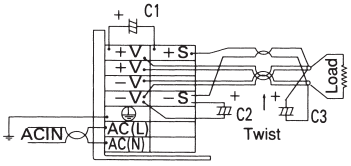


(2) When using remote sensing function

●R100U



●R150U



■When not using this function, confirm that terminals are shorted between +S and +V, and between -S and -V with short pieces.

■When using this function, wiring should be done without short pieces.

■Devices inside the power supply might be damaged when poor connection on load lines occurs, e.g. because of loose connector screws.

■Thick wire should be used for wiring between power supply and load, and line voltage drop should be less than 0.3V.

■When long sensing wire is required, use C1, C2 and C3.

■Twisted-pair wire or shield wire should be used for sensing wire.

■Please do not draw output current from +S, -S terminal.

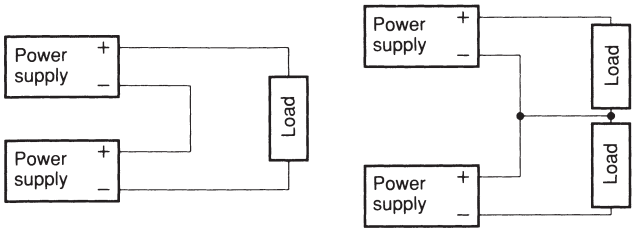
2.7 Isolation

■For a receiving inspection, such as Hi-Pot test, gradually increase (decrease) the voltage for the start (shut down). Avoid using Hi-Pot tester with the timer because it may generate voltage a few times higher than the applied voltage, at ON/OFF of a timer.

3 Series Operation and Parallel Operation

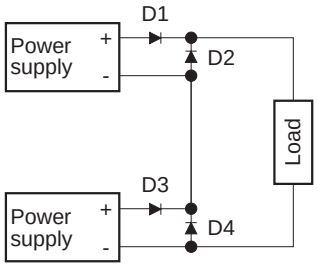
■Series operation is available by connecting the outputs of two or more power supplies, as shown below. Output current in series connection should be lower than the lowest rated current in each unit.

●R15A - R150U



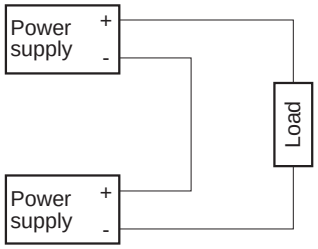
●R10A

When the output voltage is less than 5V.



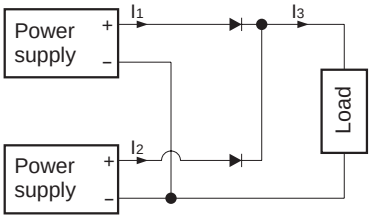
D1 - D4: Please use Schottky Barrier Diode.

When the output voltage is more than 12V.



■Parallel operation is not possible.

■Redundancy operation is available by wiring as shown below.



■Even a slight difference in output voltage can affect the balance between the values of I_1 and I_2.
Please make sure that the value of I_3 does not exceed the rated current of a power supply.

$I_3 \leqq$ the rated current value

4 Assembling and Installation Method

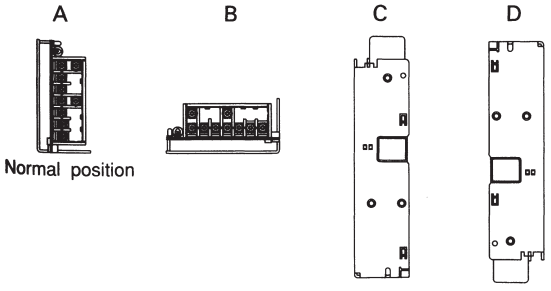
4.1 Installation method

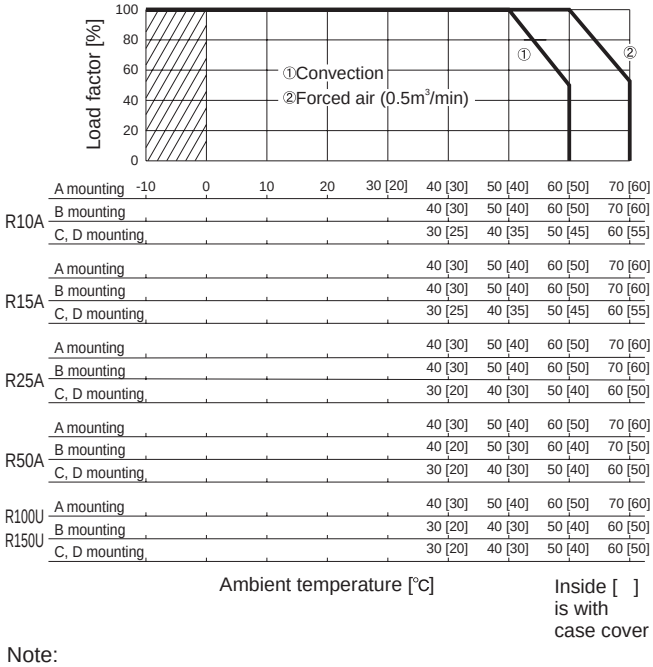
■When two or more power supplies are used side by side, position them with proper intervals to allow enough air ventilation. Ambient temperature around each power supply should not exceed the temperature range shown in derating curve.

4.2 Derating

■The operative ambient temperature is different by with/without case cover or mounting position. Please refer drawings as below.

■When unit mounted except below drawings, it is required to consider ventilated environment by forced air cooling for temperature/load derating. For details, please consult our sales or engineering departments.

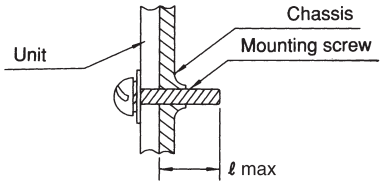




Note:
In the hatched area, the specification of Ripple, Ripple Noise is deferent from other area.

4.3 Mounting screw

■Keep isolation distance between screw and internal components as below chart.



Unit:[mm]

Model	ℓ max	Model	ℓ max
R10A	6	R50A	6
R15A	6	R100U	8
R25A	6	R150U	8