

## 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 |
| MMC8A   | Flyback converter | 70 - 250                  | 0.2               | 125V 2A          | Resistor                  | CEM-3       | Yes          |              | *1                                     | No                 |
| MMC50A  | Flyback converter | 75 - 390                  | 1.23              | 125V 3A          | Thermistor                | CEM-3       | Yes          |              | *1                                     | No                 |
| MMC75A  | Forward converter | 140                       | 1.73              | 125V 5A          | SCR                       | CEM-3       | Yes          |              | *1                                     | No                 |
| MMC100A | Forward converter | 140                       | 2.6               | 125V 5A          | SCR                       | FR-4        |              | Yes          | *1                                     | No                 |

\*1 Please refer to Series Parallel operation in the instruction manual.

\* The switching frequency of single ended flyback method changes according to input voltage and load factor.

\* The value of input current shown is at AC IN 100V and rated load.

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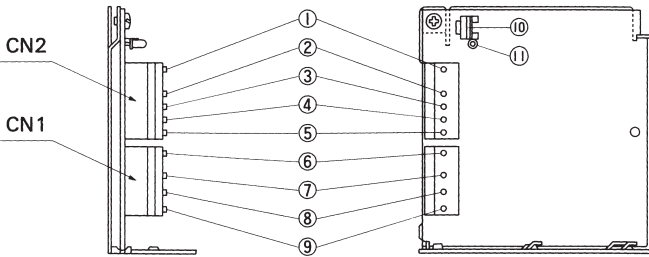
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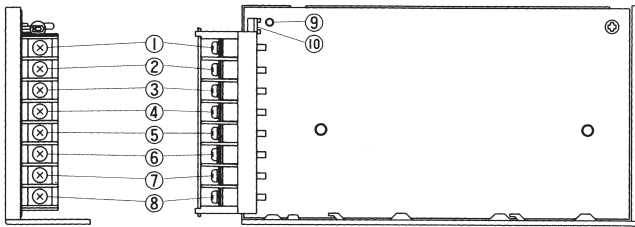
# 1 Terminal Block

## ●MMC8A



- ①V1 Output
- ②G1(V1) GND
- ③V2 Output
- ④G2(V2, V3) GND
- ⑤V3 Output
- ⑥Frame ground
- ⑦AC(N)
- ⑧NC
- ⑨AC(L)
- ⑩Output voltage adjustable potentiometer(+5V)
- ⑪LED(+5V)

## ●MMC50A · MMC75A · MMC100A



- ①V1 Output
- ②G1(V1) GND
- ③V2 Output
- ④G2(V2, V3) GND
- ⑤V3 Output
- ⑥Frame ground
- ⑦AC(L)
- ⑧AC(N)
- ⑨LED(+5V)
- ⑩Output voltage adjustable potentiometer(+5V)

# 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.

## 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.

## ●MMC50A

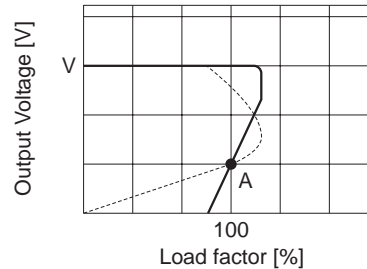
- The thermistor is used for protection from inrush current. When power is turned ON/OFF repeatedly within a short period of time, it is necessary to have enough time for power supply to cool down.

## ●MMC75A · MMC100A

- 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.

## 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 of less than 20 sec. The unit automatically recovers when the fault condition is cleared.
- When the overcurrent/short circuit condition continues more than 20 seconds, it may damage devices inside the power supply.
- The power supply which has a current foldback characteristics may not start up when connected to a nonlinear load such as a 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

### ●MMC50A · MMC75A · MMC100A

■In V1, overvoltage protection circuit is built-in to be operated at 115 - 140% of the rated voltage. When this function operates, input should be shut off, and then wait for 2 minutes(\*). Output voltage will be recovered after applying input voltage.

\* The recovery time depends 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 for V1 is possible by using potentiometer.

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

■When potentiometer is over-turned clockwise, overvoltage protection function activates. To set up output voltage, first turn potentiometer counterclockwise to the end, then turn back clockwise gradually until reaching the level of required voltage.

## 2.6 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.

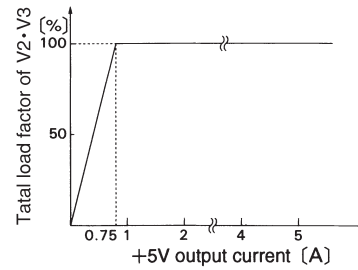
If the unit is tested on the isolation between input & output and output & FG, output terminals must be shorted.

## 2.7 Minimum output current of +5V

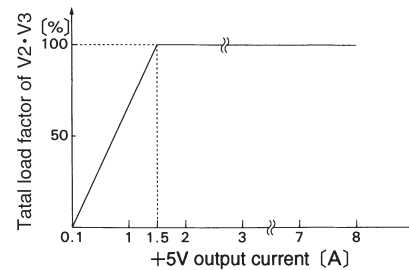
### ●MMC50A · MMC75A · MMC100A

■By V1(+5V) load condition, the load factor of V2 and V3 are changed as below.

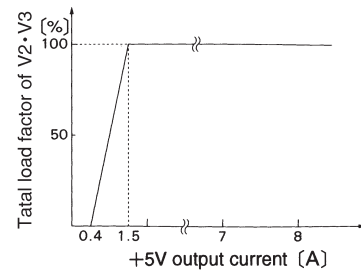
### ●MMC50A



### ●MMC75A

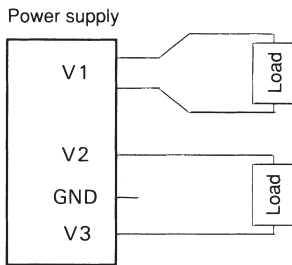


### ●MMC100A



### 3 Series Operation and Parallel Operation

- Series operation with V2 and V3 is available by connecting the outputs of the unit as shown below. Output current in series connection should be lower than the lowest output current of the unit.
- Series operation with other model is not possible.
- By adding diode externally at output side, series operation with V1 and V2 or V3 is available. For details, please consult our sales or engineering departments.
- Parallel operation is not possible.



### 4 Assembling and Installation Method

#### 4.1 Installation method

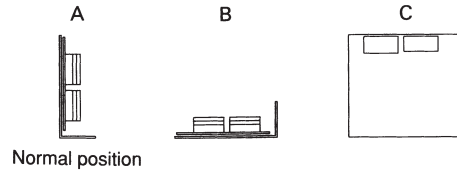
- When two or more power supplies are used side by side, position them with proper intervals to allow enough air ventilation. Ambient temperature around each power supply should not exceed the temperature range shown in derating curve.

#### 4.2 Derating

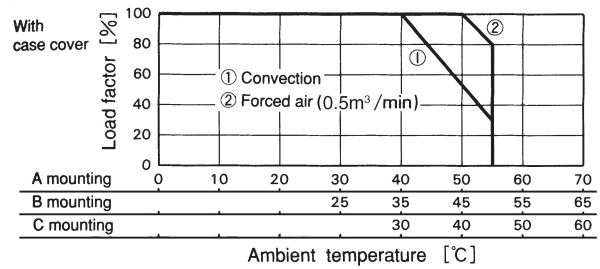
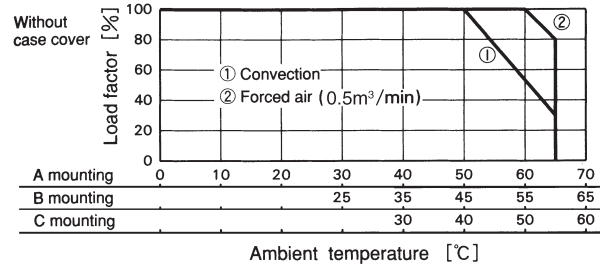
- The operative ambient temperature is different by with/without case cover or mounting position. Please refer drawings as below.
- When unit mounted except below drawings, it is required to consider ventilated environment by forced air cooling or temperature/load derating. For details, please consult our sales or engineering departments.

#### ●MMC8A

##### (1) Mounting method

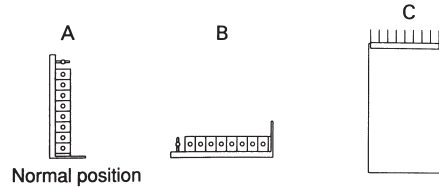


##### (2) Derating curve

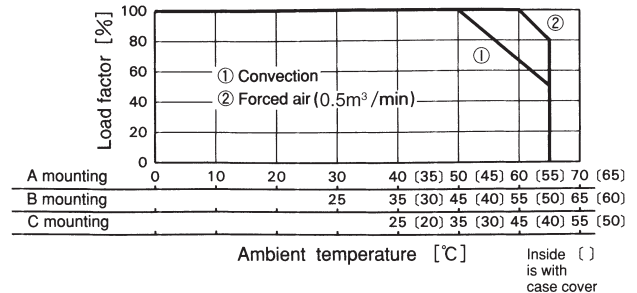


#### ●MMC50A · MMC75A

##### (1) Mounting method

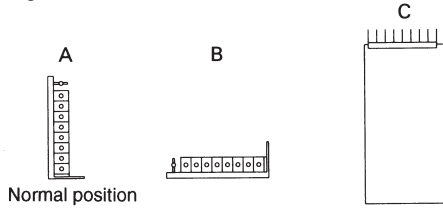


##### (2) Derating curve

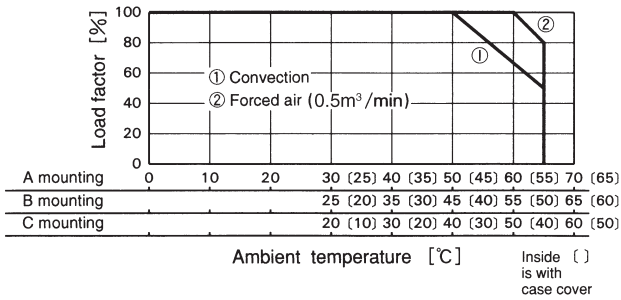


●MMC100A

(1) Mounting method



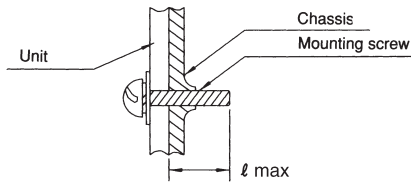
(2) Derating curve



MMC

4.3 Mounting screw

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



Unit:[mm]

| Model   | $l \text{ max}$ | Model    | $l \text{ max}$ |
|---------|-----------------|----------|-----------------|
| MMC 8A  | 6               | MMC 75A  | 5               |
| MMC 50A | 8               | MMC 100A | 8               |