

## CA977-01-01

| ITEMS                                      |          |            | MODEL        | CUS2000M-12               | CUS2000M-24                                                                                                    | CUS2000M-36 | CUS2000M-48 |             |
|--------------------------------------------|----------|------------|--------------|---------------------------|----------------------------------------------------------------------------------------------------------------|-------------|-------------|-------------|
| INPUT                                      |          |            |              |                           |                                                                                                                |             |             |             |
| Input Voltage Range & Input Frequency (*2) |          |            | -            | 85 - 265VAC (47 - 63Hz)   |                                                                                                                |             |             |             |
| Efficiency (Typ.)                          | (*12)    | 115VAC     | %            | 91.5                      | 92.5                                                                                                           | 92.8        | 93          |             |
|                                            |          | 230VAC     | %            | 93.3                      | 94.5                                                                                                           | 94.8        | 95          |             |
| Input Current (Typ.)                       | (*1)     | 115VAC     | A            | 15                        | 16                                                                                                             | 16          | 16          |             |
|                                            |          | 230VAC     | A            | 8                         | 10                                                                                                             | 10          | 10          |             |
| Inrush Current (Typ.)                      | (*1)(*3) | 115/230VAC | A            | 50A / 50A at Cold Start   |                                                                                                                |             |             |             |
| Power Factor (Typ.)                        | (*1)     | 115/230VAC | -            | 0.99/0.95                 |                                                                                                                |             |             |             |
| Leakage Current                            | (*10)    |            | -            | 0.25mA max @ 265VAC, 60Hz |                                                                                                                |             |             |             |
| OUTPUT                                     |          |            |              |                           |                                                                                                                |             |             |             |
| Nominal Output Voltage                     |          |            | V            | 12                        | 24                                                                                                             | 36          | 48          |             |
| Output Voltage Initial Set Accuracy        |          |            | -            | +/- 1%                    |                                                                                                                |             |             |             |
| Output Voltage Adjustment Range            |          |            | (*1)(*4)     | V                         | 11.7 ~ 12.6                                                                                                    | 23.4 ~ 25.2 | 35.1 ~ 37.8 | 46.8 ~ 50.4 |
| Maximum Output Current (90Vac≤Vin<170Vac)  |          |            | A            | 125.0                     | 66.7                                                                                                           | 44.5        | 33.4        |             |
| Maximum Output Current (170Vac≤Vin≤265Vac) |          |            | A            | 133.4                     | 83.4                                                                                                           | 55.5        | 41.7        |             |
| Peak Output Current                        |          |            | (*13)        | A                         | 166.7                                                                                                          | 83.4        | 55.5        | 41.7        |
| Maximum Output Power (90Vac≤Vin<170Vac)    |          |            | W            | 1500.0                    | 1600.8                                                                                                         | 1602.0      | 1603.2      |             |
| Maximum Output Power(170Vac≤Vin≤265Vac)    |          |            | W            | 1600.8                    | 2001.6                                                                                                         | 1998.0      | 2001.6      |             |
| Peak Output Power                          |          |            | (*13)        | W                         | 2000.4                                                                                                         | 2001.6      | 1998.0      | 2001.6      |
| Maximum Line Regulation                    |          |            | (*4)(*6)     | mV                        | 60.0                                                                                                           | 120.0       | 180.0       | 240.0       |
| Maximum Load Regulation                    |          |            | (*4)(*7)     | mV                        | 120.0                                                                                                          | 240.0       | 360.0       | 480.0       |
| Temperature Coefficient                    |          |            | (*4)         | -                         | Less than 0.02% / °C                                                                                           |             |             |             |
| Maximum Ripple & Noise                     |          |            | (*1)(*4)(*5) | mV                        | 240.0                                                                                                          | 360.0       | 480.0       | 480.0       |
| Hold-up time (Typ.)                        |          |            | (*1)         | ms                        | 11                                                                                                             | 12          |             |             |
| Protective function                        |          |            |              |                           |                                                                                                                |             |             |             |
| Over Current Protection                    |          |            | (*8)         | A                         | >175.2                                                                                                         | >87.6       | >58.4       | >44         |
| Over Voltage Protection                    |          |            | (*9)         | V                         | 13.8 ~ 16.2                                                                                                    | 27.6 ~ 32.4 | 41.4 ~ 48.6 | 55.2 ~ 64.8 |
| Standby Supply                             |          |            |              |                           |                                                                                                                |             |             |             |
| Nominal Output Voltage (Typ.)              |          |            | (*14)        | V                         | 5                                                                                                              |             |             |             |
| Maximum Output Current                     |          |            | (*14)        | A                         | 2                                                                                                              |             |             |             |
| FUNCTION                                   |          |            |              |                           |                                                                                                                |             |             |             |
| Remote ON/OFF Control                      |          |            | (*13)        | -                         | Possible                                                                                                       |             |             |             |
| Power Good                                 |          |            | (*13)        | -                         | Possible                                                                                                       |             |             |             |
| Remote Sensing                             |          |            | (*13)        | -                         | Possible                                                                                                       |             |             |             |
| Parallel Operation                         |          |            |              | -                         | None                                                                                                           |             |             |             |
| Series Operation                           |          |            | (*13)        | -                         | Possible                                                                                                       |             |             |             |
| ENVIRONMENT                                |          |            |              |                           |                                                                                                                |             |             |             |
| Operating Temperature                      |          |            | (*11)        | -                         | -20 to +70°C                                                                                                   |             |             |             |
| Storage Temperature                        |          |            |              | -                         | -40 to +75°C                                                                                                   |             |             |             |
| Operating Humidity                         |          |            |              | -                         | 10 to 95%RH (No condensing)                                                                                    |             |             |             |
| Storage Humidity                           |          |            |              | -                         | 10 to 95%RH (No condensing)                                                                                    |             |             |             |
| Vibration                                  |          |            | (*16)        | -                         | At no operating, 10-55Hz (Sweep for 1min.)<br>Maximum 19.6m/s2 X,Y,Z 1 hour each                               |             |             |             |
| Shock                                      |          |            | (*16)        | -                         | Less than 196m/s <sup>2</sup>                                                                                  |             |             |             |
| Cooling                                    |          |            |              | -                         | Forced air by build-in intake fan                                                                              |             |             |             |
| ISOLATION                                  |          |            |              |                           |                                                                                                                |             |             |             |
| Withstand Voltage                          |          |            |              | -                         | Input-FG : 2kVAC (20mA) 1x MOPP ,<br>Input-Output : 4kVAC (20mA) 2x MOPP<br>Output-FG : 1.5kVAC (20mA) 1x MOPP |             |             |             |
| Isolation Resistance                       |          |            |              | -                         | More than 100MΩ at 25°C,70%RH, Output - FG : 500VDC                                                            |             |             |             |

# CUS2000M

## SPECIFICATIONS

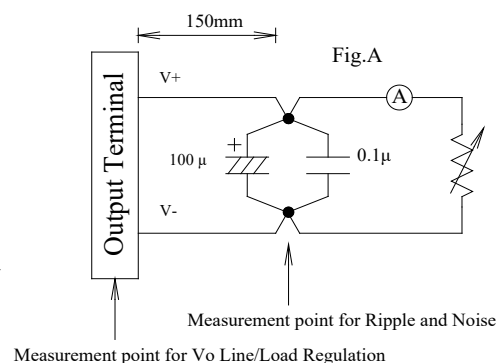
CA977-01-02

| ITEMS                   |       | MODEL | CUS2000M-12                                                                                                                                        | CUS2000M-24 | CUS2000M-36 | CUS2000M-48 |
|-------------------------|-------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------------|-------------|
| STANDARD AND COMPLIANCE |       |       |                                                                                                                                                    |             |             |             |
| Safety                  |       | -     | Approved by IEC/EN62368-1, UL62368-1, CSA62368-1 (Altitude :5000m)<br>Approved by IEC/EN60601-1, ES60601-1, CSA-C22.2 No.60601-1 (Altitude :5000m) |             |             |             |
| Conducted Emission      | (*1)  |       | Designed to meet EN55011/EN55032-B, FCC-ClassB, VCCI-B                                                                                             |             |             |             |
| Radiated Emission       | (*1)  |       | Designed to meet EN55011/EN55032-B, FCC-ClassB, VCCI-B                                                                                             |             |             |             |
| Harmonic Current        |       | -     | Designed to meet IEC61000-3-2,Class A                                                                                                              |             |             |             |
| Immunity                | (*15) | -     | Designed to meet IEC60601-1-2 Ed.4.1, IEC61000-4-2, -3, -4, -5, -6, -8, -11                                                                        |             |             |             |
| Line DIP                |       | -     | Designed to meet SEMI-F47 at 200VAC Only                                                                                                           |             |             |             |
| MECHANICAL              |       |       |                                                                                                                                                    |             |             |             |
| Weight (Typ.)           |       | kg    | 1.4                                                                                                                                                |             |             |             |
| Size (L x W x H)        |       | mm    | 203.2x 114.3 x 42.5 (Refer to Outline Drawing)                                                                                                     |             |             |             |
| OTHERS                  |       |       |                                                                                                                                                    |             |             |             |
| Coating                 |       | -     | Optional                                                                                                                                           |             |             |             |

\*Read instruction manual carefully, before using the power supply unit.

### =NOTES=

- \*1. At 115VAC/230VAC, Ta=25°C, Nominal output voltage and maximum output power.
- \*2. For cases where conformance to various safety specs (UL, CSA, EN) are required, to be described as 100-120VAC/200-240VAC(50-60Hz).  
Output derating required when Vin is less than 90VAC, refer to output derating curve for details.
- \*3. Not applicable for the in-rush current to Noise Filter for less than 0.2ms.
- \*4. Please refer to Fig. A for measurement of Vo, line and load regulation and ripple voltage.
- \*5. Ripple & noise are measured at 20MHz by using a 150mm twisted pair of load wires terminated with a 0.1uF and 100uF capacitor.
- \*6. 85~265VAC, constant load.
- \*7. No load - full load, constant input voltage.
- \*8. Hiccup with automatic recovery, however power supply may be latched for protection when output is shorted and manual reset is required (Repower on).  
Avoid to operate at over load or short circuit condition.
- \*9. OVP circuit shut down the output, manual reset (Repower on) to resume output voltage.
- \*10. Measured by the each measuring method of UL, CSA, and EN (at 60Hz), Ta=25°C.
- \*11. Refer to output derating curve for details of output derating versus input voltage, output voltage and ambient temperature.  
- Load (%) is percent of maximum output power or maximum output current.  
- Do not exceed its derating of Maximum Load for both Main Output Channel and Standby Supply.
- \*12. At 115VAC/230VAC, Ta=25°C, Nominal output voltage and maximum output power, and Standby Supply at no load.
- \*13. Refer to Instruction Manual for details.
- \*14. Please refer to various output derating curves for Standby Supply.
- \*15. Refer to Immunity Test Data for details.
- \*16. Fixed by the 4 mounting holes on the bottom or by the 8 mounting holes on the both sides.



**CUS2000M**

**OUTPUT DERATING**

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**MAIN OUTPUT DERATING VERSUS OPERATING AMBIENT TEMPERATURE (Ta)**

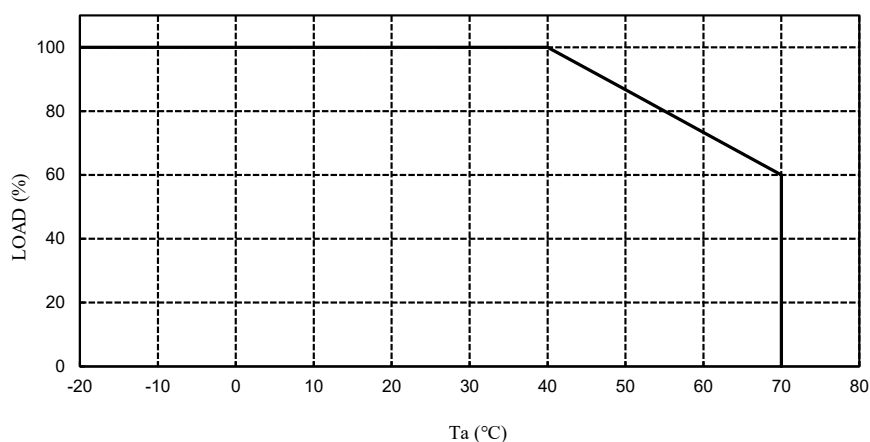
Output derating versus input voltage should be considered. Please refer to the output derating versus input voltage curve for detail.

Load (%) is percent of maximum output power or maximum output current.

If output voltage is raised higher than nominal, maximum power derating versus high output voltage should be considered.

MODEL: CUS2000M-12/24/36/48

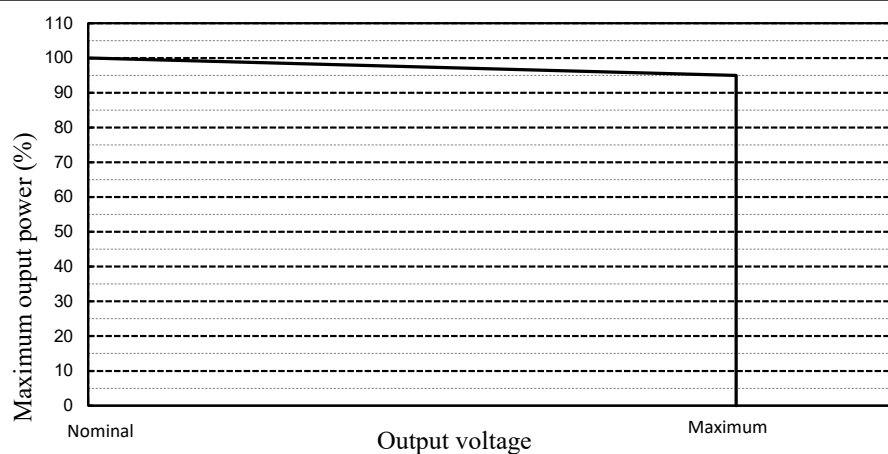
| Ta (°C)   | LOAD (%) |
|-----------|----------|
| -20 ~ +40 | 100      |
| 50        | 86.7     |
| 60        | 73.3     |
| 70        | 60       |



**MAIN OUTPUT POWER DERATING VERSUS HIGH OUTPUT VOLTAGE**

MODEL: CUS2000M-12/24/36/48

| Output voltage         | Maximum Output Power (%) |
|------------------------|--------------------------|
| Nominal output voltage | 100                      |
| Maximum output voltage | 95                       |



Note: The maximum voltage of each models.

| Model       | Maximum Output Voltage |
|-------------|------------------------|
| CUS2000M-12 | 12.6V                  |
| CUS2000M-24 | 25.2V                  |
| CUS2000M-36 | 37.8V                  |
| CUS2000M-48 | 50.4V                  |

CUS2000M

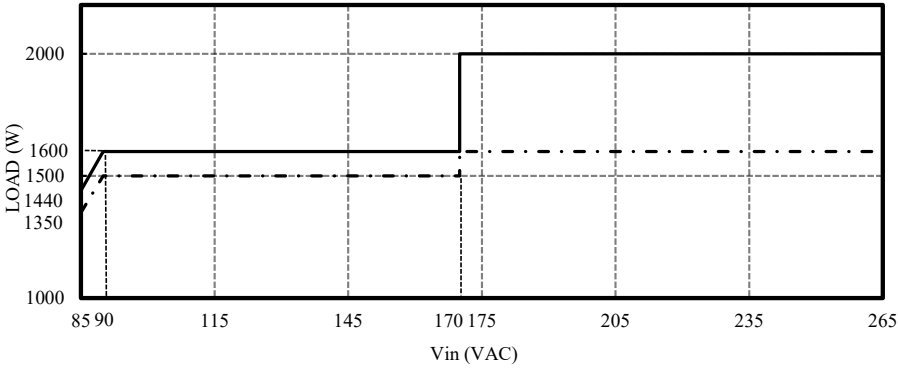
OUTPUT DERATING

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OUTPUT DERATING VERSUS INPUT VOLTAGE

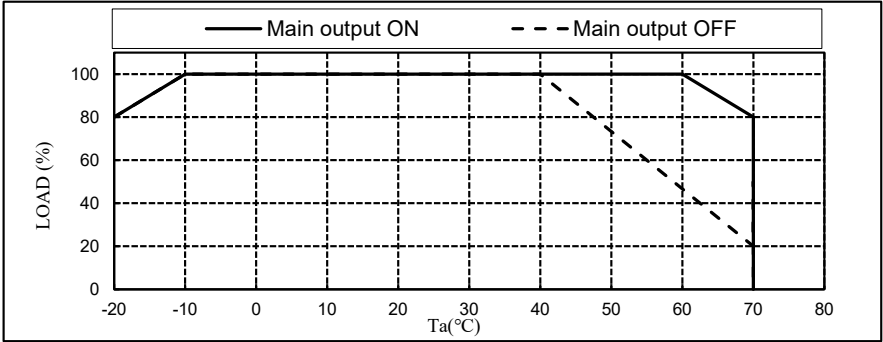
MODEL: CUS2000M-12      - - - - -  
MODEL: CUS2000M-24/36/48      \_\_\_\_\_

| Model<br>Input | 12V    | 24V   | 36V   | 48V   |
|----------------|--------|-------|-------|-------|
| 85Vac          | 1350W  | 1440W | 1440W | 1440W |
|                | 112.5A | 60A   | 40A   | 30A   |
| 90~170Vac      | 1500W  | 1600W | 1600W | 1600W |
|                | 125A   | 66.7A | 44.5A | 33.4A |
| 170-265Vac     | 1600W  | 2000W | 2000W | 2000W |
|                | 133.4A | 83.4A | 55.5A | 41.7A |



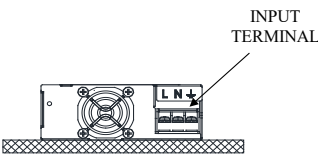
STANDBY SUPPLY OUTPUT DERATING VERSUS OPERATING AMBIENT TEMPERATURE (Ta)

| Ta (°C)  | LOAD (%)       |                 |
|----------|----------------|-----------------|
|          | Main output ON | Main output OFF |
| -20      | 80             | 80              |
| -10 ~ 40 | 100            | 100             |
| 50       | 100            | 73.3            |
| 60       | 100            | 46.7            |
| 70       | 80             | 20              |

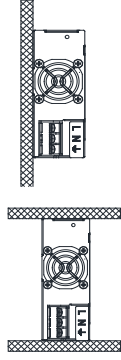


MOUNTING METHOD

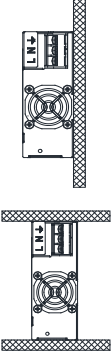
MOUNTING A  
(STANDARD MOUNTING)



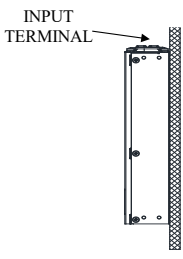
MOUNTING B



MOUNTING C



MOUNTING D



MOUNTING E

