



## 3000W Power Supply with Single Output

# CSP-3000 series



## User's Manual



## Video



## Dimension

L \* W \* H  
 278 \* 177.8 \* 63.5 (2U) mm  
 10.9 \* 7 \* 2.5 (2U) inch



CRUS

BS EN/EN62368-1



ER

[ CE ]



## ■ Features

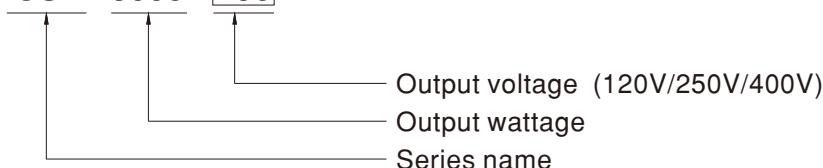
- AC input 180~264VAC
  - Built-in active PFC function
  - High efficiency up to 93%
  - Forced air cooling by built-in DC fans
  - Output voltage / current programmable
  - Active current sharing up to 9000W(2+1)
  - Built-in remote ON-OFF control / auxiliary power / power OK signal
  - Protections: Short circuit / Overload / Over voltage / Over temperature / Fan failure
  - Conformal coating
  - 5 years warranty

## ■ Description

CSP-3000 is a 3KW single output enclosed type AC/DC power supply. This series operates for 180~264VAC input voltage and offers the models with the DC output mostly demanded from the industry. Each model is cooled by the built-in fan with fan speed control, working for the temperature up to 65°C. Moreover, CSP-3000 provides vast design flexibility by equipping various built-in functions such as the output programming, active current sharing, remote ON-OFF control, auxiliary power, etc.

## ■ Model Encoding / Order Information

**CSP - 3000 - 250**



## ■ Applications

- Factory control or automation apparatus
  - Test and measurement instrument
  - Laser related machine
  - UV curing equipment
  - Fish lamp
  - Burn-in facility

## SPECIFICATION

| MODEL                 | CSP-3000-120  | CSP-3000-250  | CSP-3000-400  |
|-----------------------|---|---|---|
| OUTPUT                | DC VOLTAGE  | 120V  | 250V  |
|                       | RATED CURRENT   | 25A   | 12A   |
|                       | CURRENT RANGE   | 0 ~ 25A   | 0 ~ 12A   |
|                       | RATED POWER   | 3000W   | 3000W   |
|                       | RIPPLE & NOISE (max.) Note.2  | 800mVp-p  | 1000mVp-p   |
|                       | CONSTANT CURRENT REGION   | 90 ~ 120V   | 125 ~ 250V  |
|                       | VOLTAGE TOLERANCE Note.3  | ±1.0%   | ±1.0%   |
|                       | LINE REGULATION   | ±0.5%   | ±0.5%   |
|                       | LOAD REGULATION   | ±0.5%   | ±0.5%   |
|                       | SETUP, RISE TIME  | 1000ms, 80ms / 230VAC at full load  |   |
| INPUT                 | HOLD UP TIME (Typ.)   | 10ms at full load   |   |
|                       | VOLTAGE RANGE Note.4  | 180 ~ 264VAC 254 ~ 370VDC   |   |
|                       | FREQUENCY RANGE   | 47~63Hz   |   |
|                       | POWER FACTOR (Typ.)   | PF ≥ 0.95 / 230VAC at full load   |   |
|                       | EFFICIENCY (Typ.)   | 92%   | 92.5%   |
|                       | AC CURRENT (Typ.)   | 20A/180VAC 16A/230VAC   |   |
| PROTECTION            | INRUSH CURRENT (Typ.)   | Cold start 60A/230VAC   |   |
|                       | LEAKAGE CURRENT   | <0.3mA / 240VAC   |   |
|                       | SHORT CIRCUIT   | Shut down and latch off o/p voltage, re-power on to recover   |   |
|                       | OVER CURRENT  | 105 ~ 120% rated output power   | User adjustable continuous constant current limiting or constant current limiting with delay shutdown after 3 seconds, re-power on to recover (Please refer to the Function Manual) |
| FUNCTION              | OVER VOLTAGE  | 127 ~ 150V  | 265 ~ 315V 420 ~ 500V   |
|                       |   | Protection type : Shut down o/p voltage, re-power on to recover                                     |   |
|                       | OVER TEMPERATURE  | Shut down o/p voltage, recovers automatically after temperature goes down or re-power on to recover |   |
|                       | OUTPUT VOLTAGE PROGRAMMABLE(PV)   | Please refer to the Function Manual.  |   |
| ENVIRONMENT           | OUTPUT CONSTANT CURRENT PROGRAMMABLE(PC)  | Please refer to the Function Manual.  |   |
|                       | CURRENT SHARING   | Please refer to the Function Manual.  |   |
|                       | AUXILIARY POWER(AUX)  | 12V@0.4A  |   |
|                       | REMOTE ON-OFF CONTROL   | Please refer to the Function Manual   |   |
|                       | ALARM SIGNAL OUTPUT   | Power OK signal. Please refer to the Function Manual  |   |
| SAFETY & EMC (Note 5) | WORKING TEMP.   | -20 ~ +65°C (Refer to "Derating Curve")   |   |
|                       | WORKING HUMIDITY  | 20 ~ 90% RH non-condensing  |   |
|                       | STORAGE TEMP., HUMIDITY   | -40 ~ +85°C, 10 ~ 95% RH non-condensing   |   |
|                       | TEMP. COEFFICIENT   | ±0.05%/°C (0 ~ 50°C)  |   |
|                       | VIBRATION   | 10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes  |   |
| SAFETY & EMC (Note 5) | SAFETY STANDARDS  | UL62368-1, Dekra seal BS EN/EN62368-1, EAC TP TC004, GB4943.1                                       |   |
|                       | WITHSTAND VOLTAGE   | I/P-O/P:3KVAC I/P-FG:2KVAC O/P-FG:0.5KVAC   |   |
|                       | ISOLATION RESISTANCE  | I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25°C / 70% RH  |   |
|                       | EMC EMISSION  | Parameter   | Standard  |
|                       |   | Conducted   | BS EN/EN55032(CISPR32)  |
|                       |   | Radiated  | BS EN/EN55032(CISPR32)  |
|                       |   | Harmonic Current  | BS EN/EN61000-3-2   |
|                       |   | Voltage Flicker   | BS EN/EN61000-3-3   |
|                       | EMC IMMUNITY  | Parameter   | Standard  |
|                       |   | ESD   | BS EN/EN61000-4-2   |
|                       |   | Radiated  | BS EN/EN61000-4-3   |
|                       |   | EFT / Burst   | BS EN/EN61000-4-4   |
|                       |   | Surge   | BS EN/EN61000-4-5   |
|                       |   | Conducted   | BS EN/EN61000-4-6   |
|                       |   | Magnetic Field  | BS EN/EN61000-4-8   |
| OTHERS                | Voltage Dips and Interruptions  |   |   |
|                       | MTBF  | 223.8K hrs min. Telcordia SR-332 (Bellcore) ; 75.1K hrs min. MIL-HDBK-217F (25°C)                   |   |
|                       | DIMENSION   | 278*177.8*63.5mm (L*W*H)  |   |
| NOTE                  | PACKING   | 4Kg; 4pcs/16Kg/1.81CUFT   |   |
|                       | 1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature.<br>2. In the PV Mode: Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor.<br>3. Tolerance : includes set up tolerance, line regulation and load regulation.<br>4. Turn off the output when input voltage is less than 160VAC.<br>5. The power supply is considered a component which will be installed into a final equipment. All the EMC tests are been executed by mounting the unit on a 720mm*360mm metal plate with 1mm of thickness. The final equipment must be re-confirmed that it still meets EMC directives. For guidance on how to perform these EMC tests, please refer to "EMI testing of component power supplies." (as available on <a href="http://www.meanwell.com">http://www.meanwell.com</a> )<br>6. The ambient temperature derating of 3.5°C/1000m with fanless models and of 5°C/1000m with fan models for operating altitude higher than 2000m(6500ft).<br>※ Product Liability Disclaimer : For detailed information, please refer to <a href="https://www.meanwell.com/serviceDisclaimer.aspx">https://www.meanwell.com/serviceDisclaimer.aspx</a> |   |   |

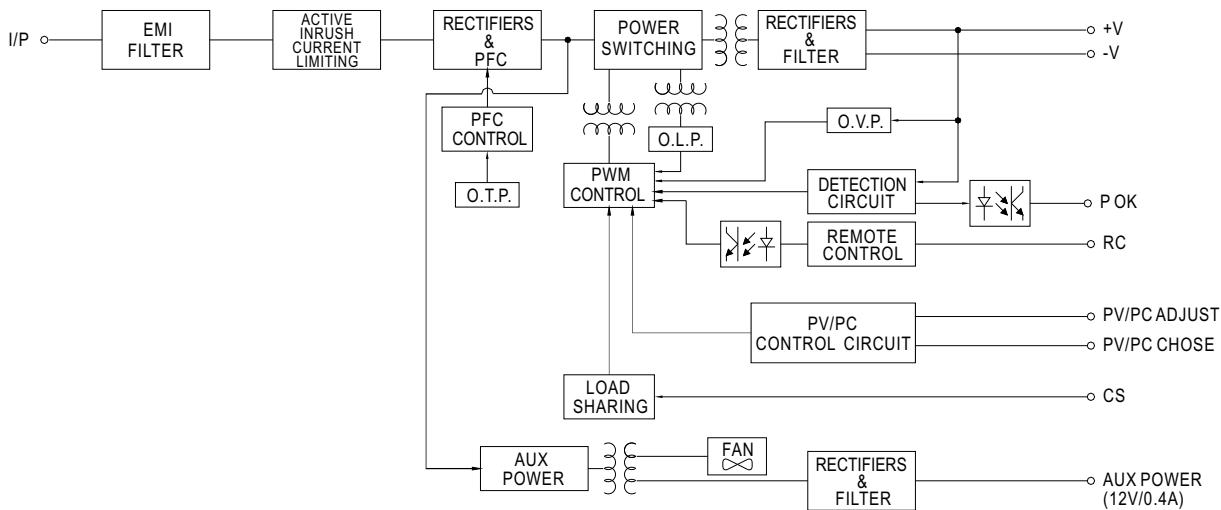


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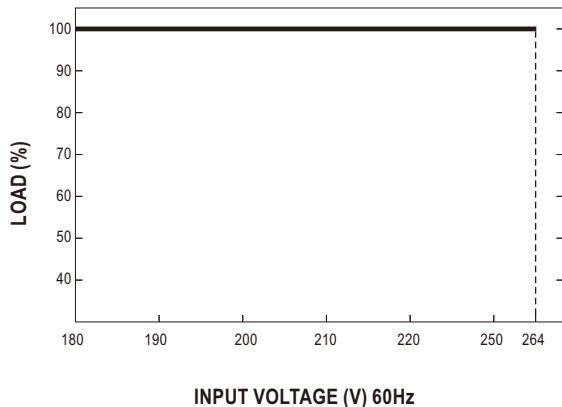
**CSP-3000** series

■ Block Diagram

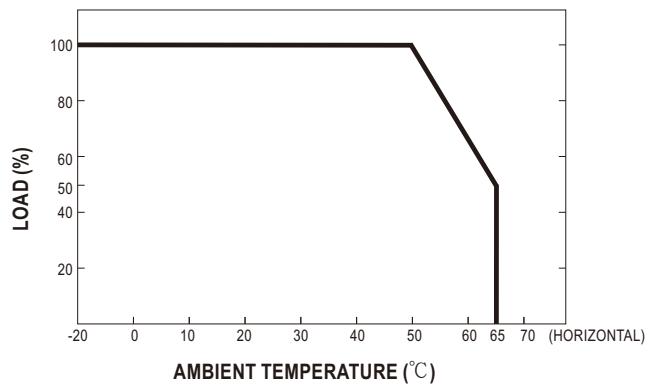
PFC fosc : 85KHz  
PWM fosc : 100KHz



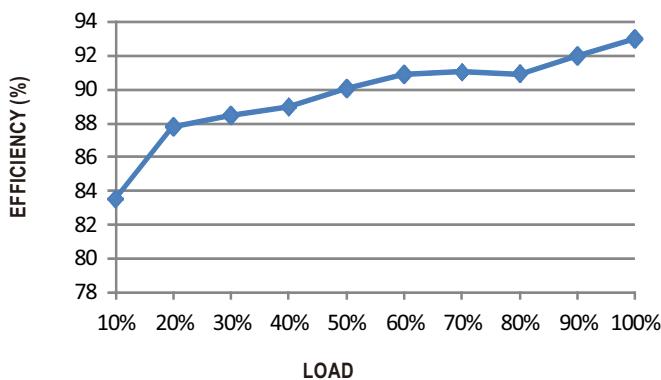
■ Static Characteristics



■ Derating Curve



■ Efficiency vs Load (400V Model)

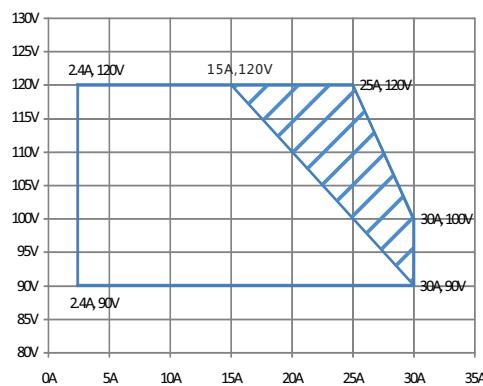


※ The curve above is measured at 230VAC.

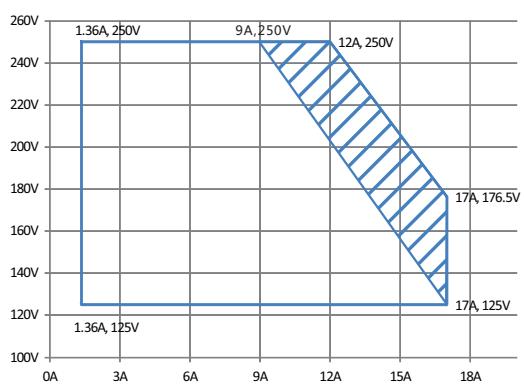
### ■ DRIVING METHODS OF LED MODULE

※ I-V Operating Area(for PC mode only)

◎ CSP-3000-120



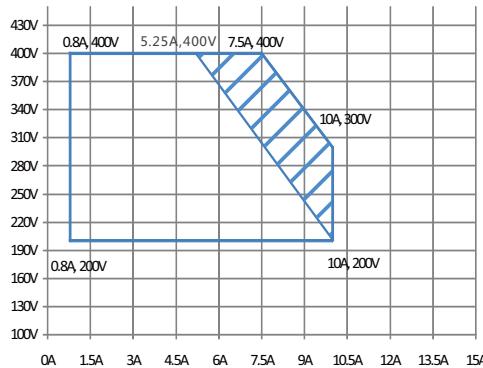
◎ CSP-3000-250



■ Recommended High Performance Region ■ Allowed Operational Region

■ Recommended High Performance Region ■ Allowed Operational Region

◎ CSP-3000-400



■ Recommended High Performance Region ■ Allowed Operational Region



3000W Power Supply with Single Output

CSP-3000 series

## ■ Function Manual

### 1. Output Voltage/Current Programming

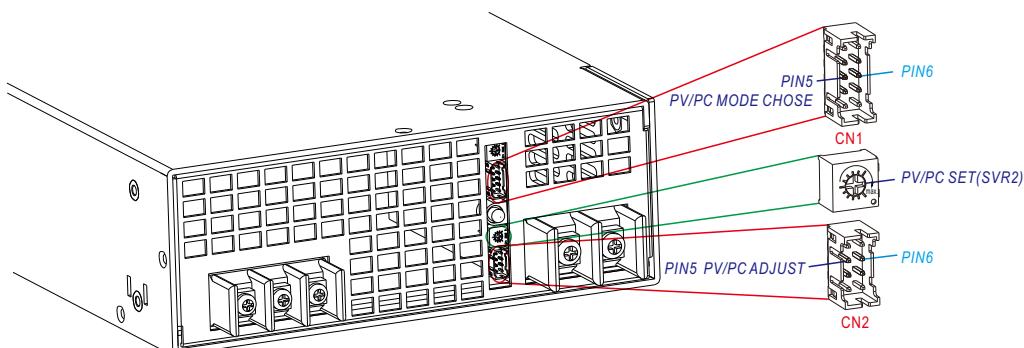
※ Mode Setting

CN1:

|           | CONDITION | MODE    | FUNCTION                   |
|-----------|-----------|---------|----------------------------|
| PIN5/PIN6 | SHORT     | PV MODE | Output Voltage Programming |
|           | OPEN      | PC MODE | Output Current Programming |

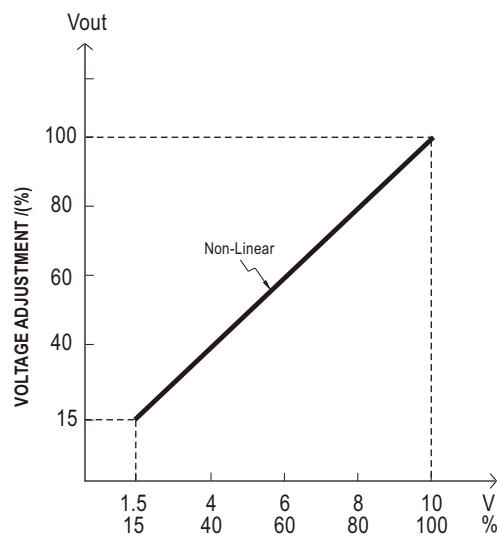
※ The factory default settings: PV mode output max voltage pin5/pin6 short by jumper cap.

When pull out the jumper cap, the default settings: PC mode output max constant current.

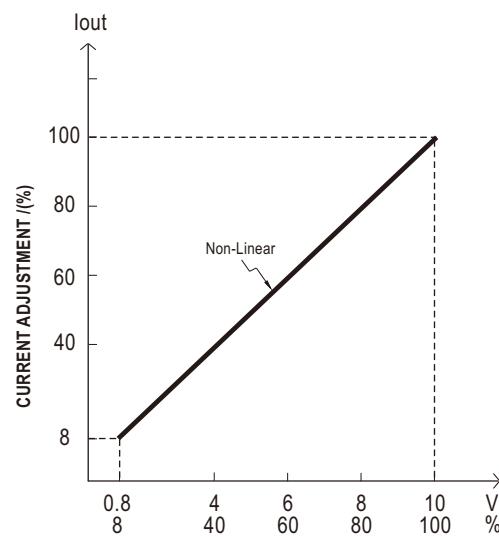


※ PV/PC Set adjustment

- ◎ Adjust the resistance(SVR2) can set output voltage or constant current point, the adjusting range is 20%-100% of max voltage or max constant current point.
- ◎ In the CN2, pin5/pin6 access external 10V voltage signal or 500-1KHz PWM signal can adjust the output voltage or constant current point.
- CN2:PIN5/PIN6 needs to operate with a 10V sinking signal or PWM signal, Max. sink current 1mA.



PIN5/PIN6 ACCESS TO EXTERNEL VOLTAGE SIGNALS(DC/PWM)

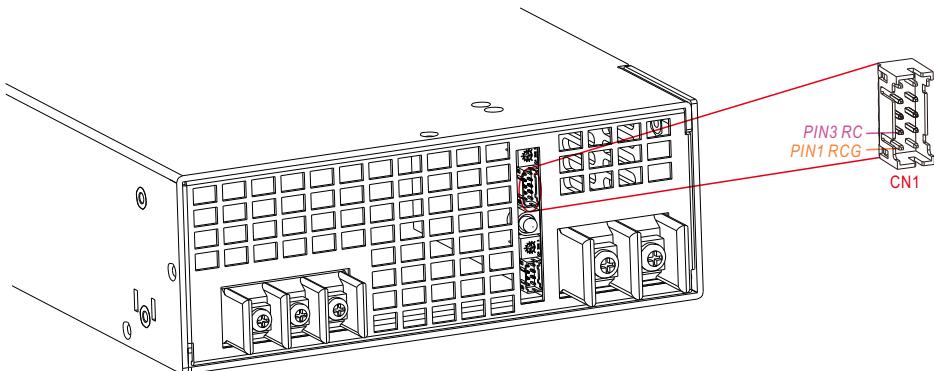


PIN5/PIN6 ACCESS TO EXTERNEL VOLTAGE SIGNALS(DC/PWM)

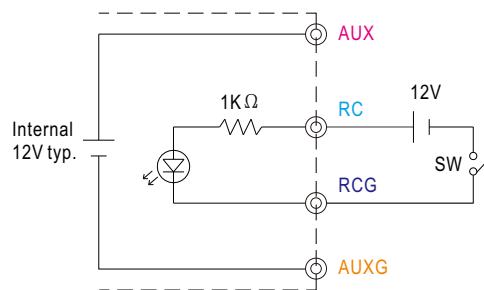
| MODEL    | 120V            | 250V              | 400V            |
|----------|-----------------|-------------------|-----------------|
| PV range | 18 ~ 120V(max.) | 37.5 ~ 250V(max.) | 60 ~ 400V(max.) |
| PC range | 2.4 ~ 30A(max.) | 1.4~ 17A(max.)    | 0.8 ~ 10A(max.) |

## 2. Remote ON-OFF

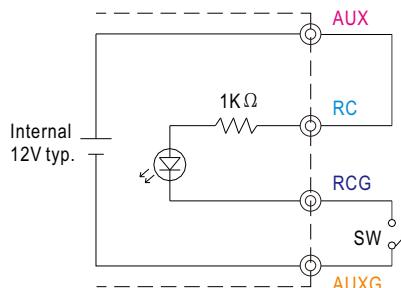
※ Remote ON-OFF is activated by the configuration with respect to CN1 as shown in the following diagram.



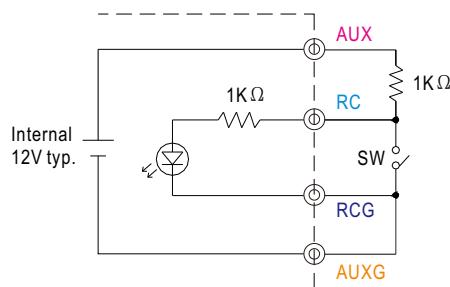
Example 2.2(A): Using external voltage source



Example 2.2(B): Using internal 12V auxiliary output



Example 2.2(C): Using internal 12V auxiliary output



## ◎ Connection Method

|          |                         | Example 2.2(A)  | Example 2.2(B)  | Example 2.2(C)  |
|----------|-------------------------|-----------------|-----------------|-----------------|
| SW Logic | Power supply output ON  | SW Open(open)   | SW Open(open)   | SW Close(short) |
|          | Power supply output OFF | SW Close(short) | SW Close(short) | SW Open(open)   |

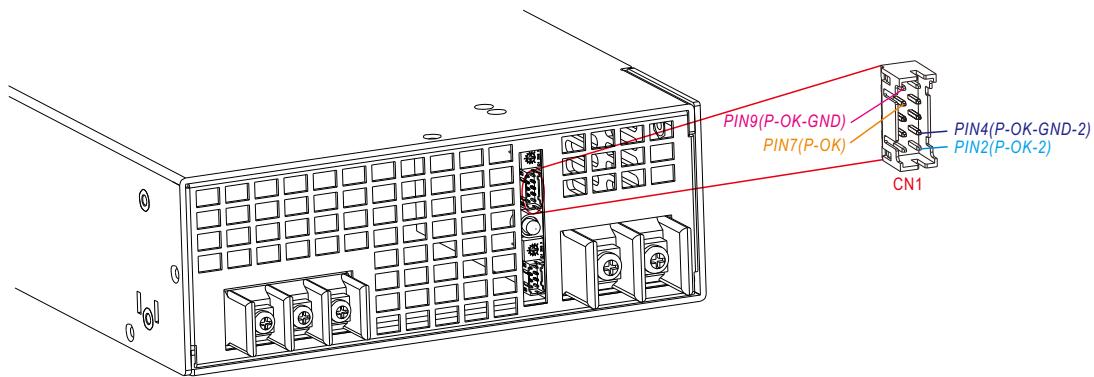


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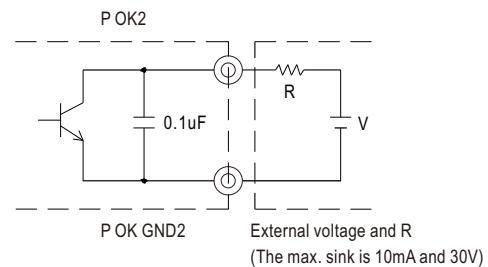
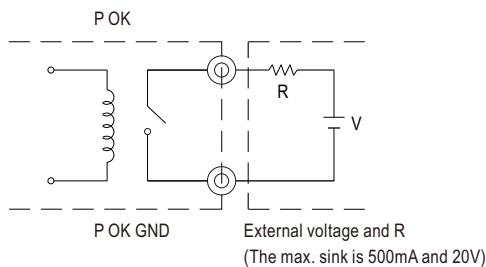
**3. Alarm Signal Output**

※ Alarm signal is sent out through "P OK" & "P OK GND" and P OK2 & P OK GND2 pins on CN1. Please acknowledge an external voltage source is required for this function.



| Function | Description   | Output of alarm(P OK, Relay Contact)                   | Output of alarm(P OK2, TTL Signal)                    |
|----------|---|--|---|
| P OK     | The signal is "Low" when the power supply is above 80% of the rated output voltage, or, say, Power OK             | Low<br>(0.5V max at 500mA)                             | Low<br>(0.5V max at 10mA)                             |
|          | The signal turns to be "High" when the power supply is under 80% of the rated output voltage, or, say, Power Fail | High or open<br>(External applied voltage, 500mA max.) | High or open<br>(External applied voltage, 10mA max.) |

Table 3.1 Explanation of alarm

**4. Select Overload Protection Type**

- (1) Insert the shorting connector on CN1 that is shown in Fig 4.1, the Overload Protection Type will be "constant current limiting with delay shutdown after 3 seconds, re-power on to recover". This is the factory default.
- (2) Remove the shorting connector on CN1 that is shown in Fig 4.2, the Overload Protection Type will be "continuous constant current limiting".

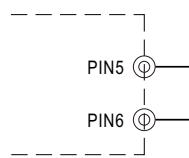


Fig. 4.1 Insert the CN1  
Overload Protection Type : constant current limiting with delay shutdown after 3 seconds

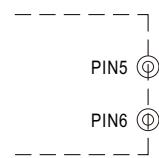


Fig. 4.2 Remove the CN1  
Overload Protection Type : constant current limiting

## 5. Current Sharing

CSP-3000 has the built-in active current sharing function and can be connected in parallel, up to 3 units, to provide higher output power as exhibited below :

※ The power supplies should be paralleled using short and large diameter wiring and then connected to the load.

※ Difference of output voltages among parallel units should be less than 0.2V (Can Fine tune by SVR1).

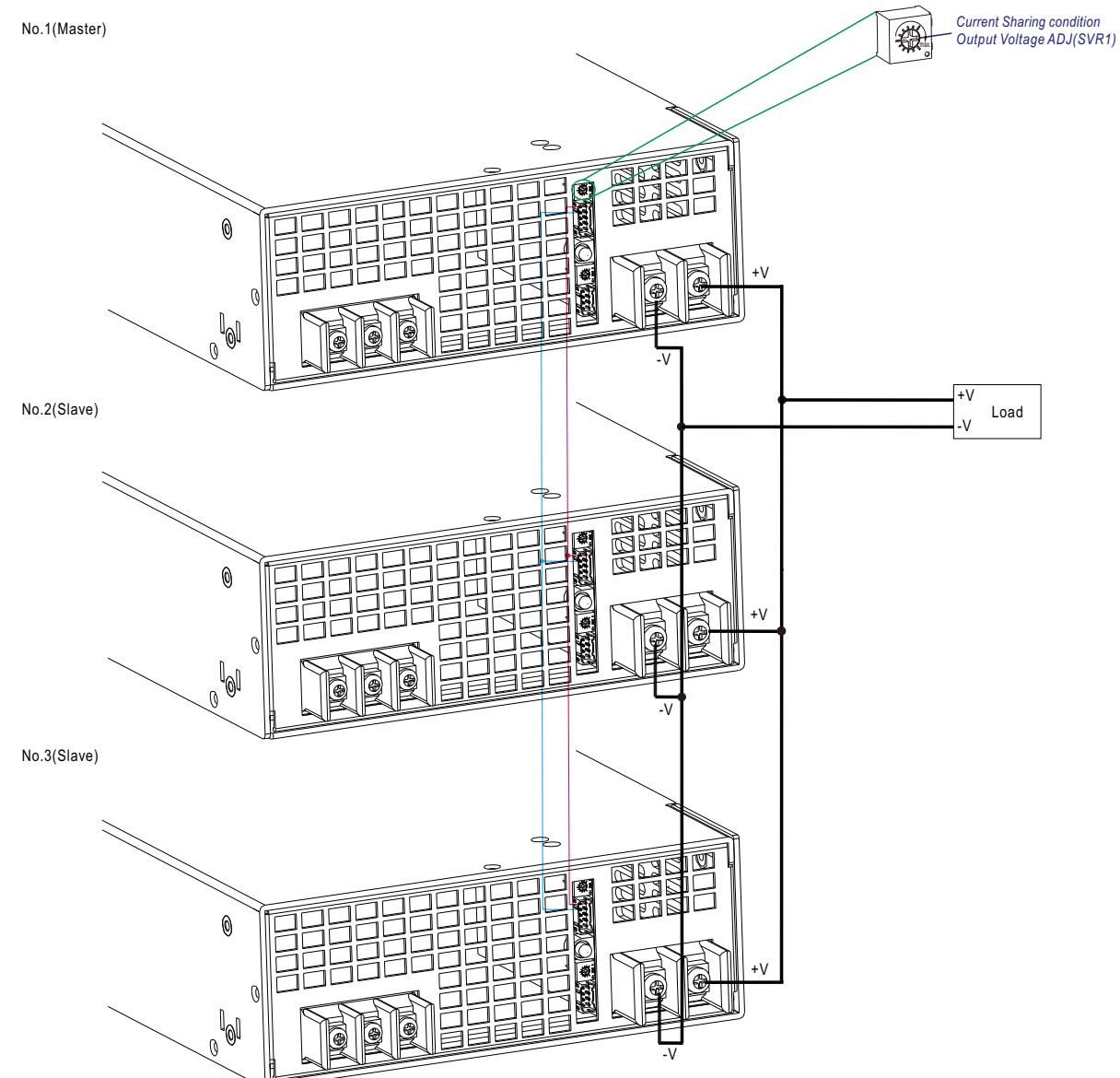
※ The total output current must not exceed the value determined by the following equation:

Maximum output current at parallel operation = (Rated current per unit) × (Number of unit) × 0.9

※ When out current < (50% rated current) × (Number of unit),  
the current shared among units may not be fully balanced.

◎ CS+/CS- on CN1 are connected mutually in parallel (Note: CS+/CS- do not reverse connection).

◎ Under parallel operation, the "PV/PC" function is not available.

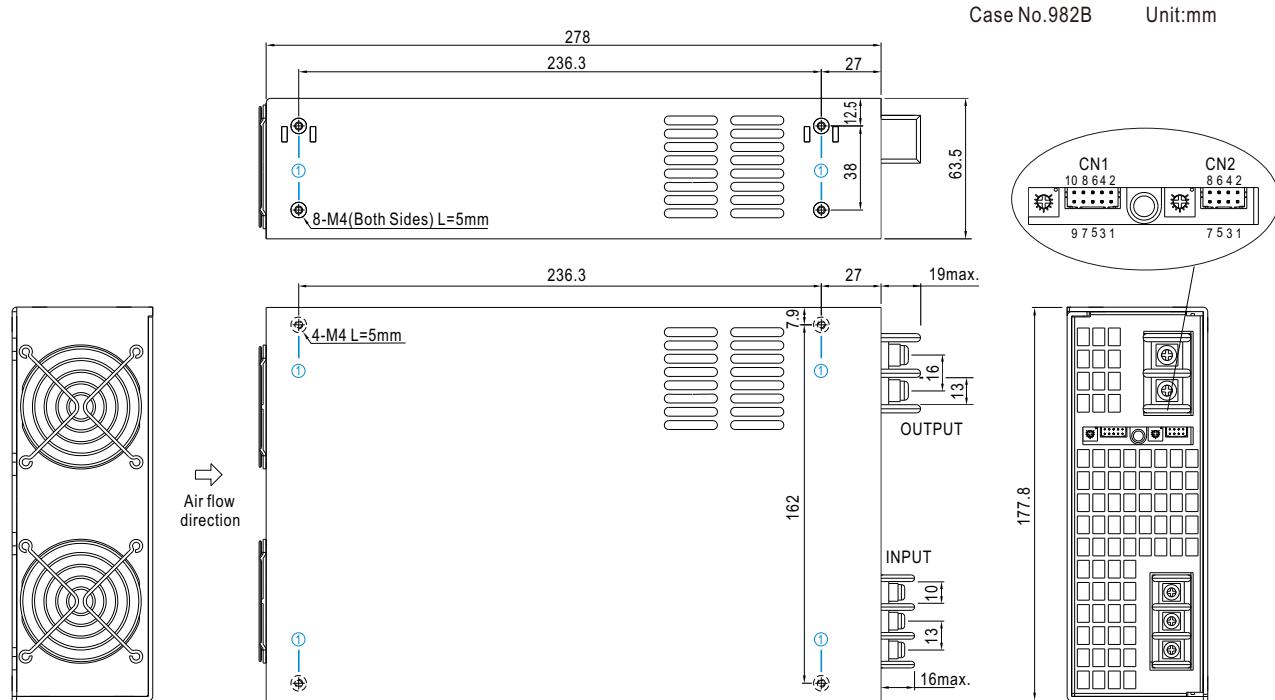




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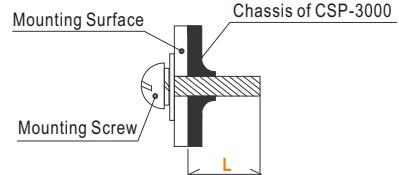
CSP-3000 series

### ■ Mechanical Specification



### ※ Mounting Instruction

| Hole No. | Recommended Screw Size | MAX. Penetration Depth L | Recommended mounting torque |
|----------|------------------------|--------------------------|-----------------------------|
| ①        | M4                     | 5mm                      | 7~10Kgf-cm                  |

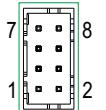


### ※ Control Pin No. Assignment (CN1) : HRS DF11-10DP-2DS or equivalent

|  |                |                             |
|--|----------------|-----------------------------|
|  | Mating Housing | HRS DF11-10DS or equivalent |
|  | Terminal       | HRS DF11-**SC or equivalent |

| Pin No. | Function   | Description                    |
|---------|------------|--------------------------------|
| 1       | RCG        | Remote ON-OFF Ground           |
| 2       | P-OK-2     | Power OK Signal(TTL Signal)    |
| 3       | RC         | Remote ON-OFF                  |
| 4       | P-OK-GND-2 | Power OK Ground                |
| 5       | GND        | PV/PC Mode Choose Ground       |
| 6       | Mode       | PV/PC Mode Choose              |
| 7       | P-OK       | Power OK Signal(Relay Contact) |
| 8       | CS+        | Current Sharing Signal+        |
| 9       | P-OK GND   | Power OK Ground                |
| 10      | CS-        | Current Sharing Signal-        |

※Control Pin No. Assignment (CN2) : HRS DF11-8DP-2DS or equivalent



|                |                             |
|----------------|-----------------------------|
| Mating Housing | HRS DF11-8DS or equivalent  |
| Terminal       | HRS DF11-**SC or equivalent |

| Pin No. | Function | Description          |
|---------|----------|----------------------|
| 1       | 12V AUXG | Auxiliary output GND |
| 2       | 12V AUX+ | Auxiliary output+    |
| 3       | NC       |                      |
| 4       | NC       |                      |
| 5       | PV/PC+   | PV/PC adjust+        |
| 6       | PV/PC-   | PV/PC adjust-        |
| 7       | NC       |                      |
| 8       | NC       |                      |

Note: NC pins, please keep open circuit and do not connect to other pins/signals.

※LED status indication

| LED                               | LED Signal | Description                                     |
|-----------------------------------|------------|---|
| Green LED normal                  | —          | Power supply working normally                   |
| Green LED slow flash (Cycle 1.4S) | — — —      | Standby power supply (Remote off)               |
| Red LED of flash (Cycle 200mS)    | — — — —    | Power OVP, output voltage too low               |
| Red LED slow flash (Cycle 1.4S)   | — — —      | NTC fault, power OTP, temperature switch action |
| Red LED normal                    | —          | Power fan fault                                 |
| Red LED of flash (Cycle 200mS)    | — — — —    | Line fault, CN2 pin 7/8 signal abnormal         |
| Green LED of flash                | — — — —    |   |

※AC Input Terminal Pin No. Assignment

| Pin No. | Assignment | Diagram   | Maximum mounting torque |
|---------|------------|---|-------------------------|
| 1       | AC/L       |  |                         |
| 2       | AC/N       |  |                         |
| 3       | FG ±       |   | 18Kgf-cm                |

※DC Output Terminal Pin No. Assignment

| Pin No. | Assignment | Diagram   | Maximum mounting torque |
|---------|------------|---|-------------------------|
| 1       | V-         |  |                         |
| 2       | V+         |  | 18Kgf-cm                |

## ■ Installation Manual

Please refer to : <http://www.meanwell.com/manual.html>