



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 |



#### ■ 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
- Programmable output voltage & constant current function
- 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**

Output voltage (120V/250V/400V)

Output wattage

Series name

#### ■ Applications

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

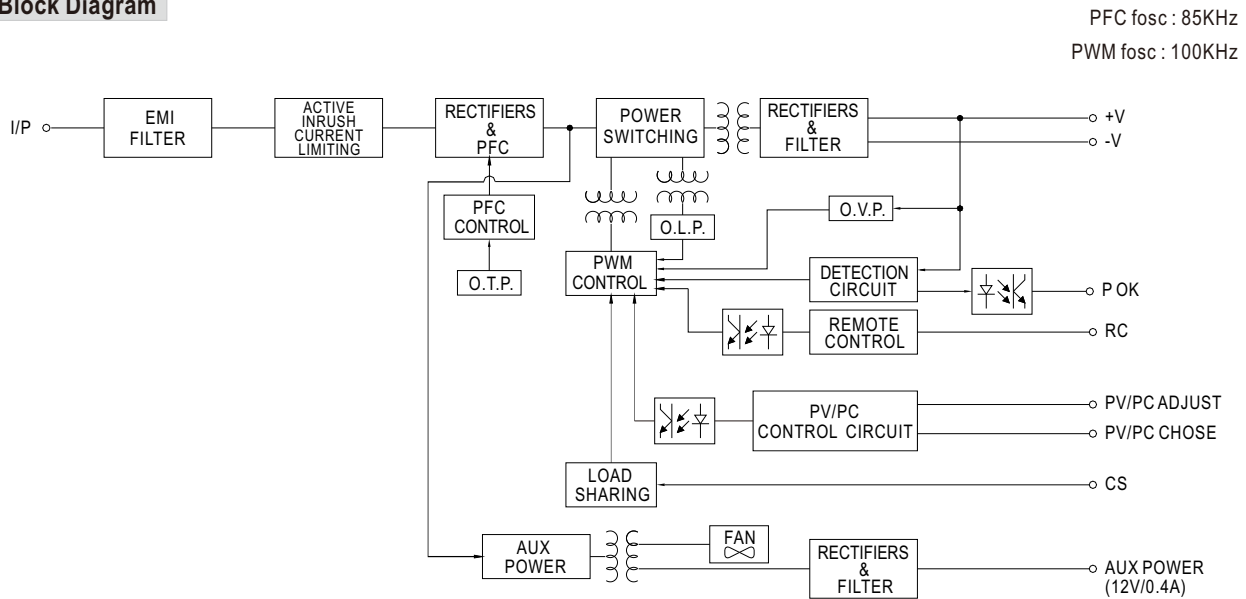
#### ■ GTIN CODE

MW Search: <https://www.meanwell.com/serviceGTIN.aspx>

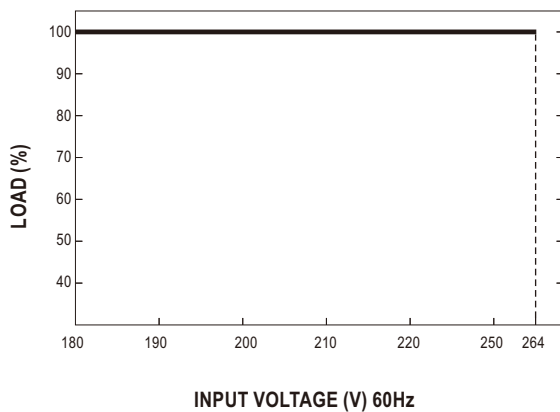
## SPECIFICATION

| MODEL                    |                                                                                                     | CSP-3000-120                                                                                                                                                                                                         | CSP-3000-250           | CSP-3000-400                                                             |
|--------------------------|-----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|--------------------------------------------------------------------------|
| OUTPUT                   | DC VOLTAGE                                                                                          | 120V                                                                                                                                                                                                                 | 250V                   | 400V                                                                     |
|                          | RATED CURRENT                                                                                       | 25A                                                                                                                                                                                                                  | 12A                    | 7.5A                                                                     |
|                          | CURRENT RANGE                                                                                       | 0 ~ 25A                                                                                                                                                                                                              | 0 ~ 12A                | 0 ~ 7.5A                                                                 |
|                          | RATED POWER                                                                                         | 3000W                                                                                                                                                                                                                | 3000W                  | 3000W                                                                    |
|                          | RIPPLE & NOISE (max.) <small>Note.2</small>                                                         | 800mVp-p                                                                                                                                                                                                             | 1000mVp-p              | 1200mVp-p                                                                |
|                          | CONSTANT CURRENT REGION                                                                             | 90 ~ 120V                                                                                                                                                                                                            | 125 ~ 250V             | 200 ~ 400V                                                               |
|                          | VOLTAGE TOLERANCE <small>Note.3</small>                                                             | ± 1.0%                                                                                                                                                                                                               | ± 1.0%                 | ± 1.0%                                                                   |
|                          | LINE REGULATION                                                                                     | ± 0.5%                                                                                                                                                                                                               | ± 0.5%                 | ± 0.5%                                                                   |
|                          | LOAD REGULATION                                                                                     | ± 0.5%                                                                                                                                                                                                               | ± 0.5%                 | ± 0.5%                                                                   |
|                          | SETUP, RISE TIME                                                                                    | 1000ms, 80ms / 230VAC at full load                                                                                                                                                                                   |                        |                                                                          |
|                          | HOLD UP TIME (Typ.)                                                                                 | 10ms at full load                                                                                                                                                                                                    |                        |                                                                          |
| INPUT                    | VOLTAGE RANGE <small>Note.4</small>                                                                 | 180 ~ 264VAC      254 ~ 370VDC                                                                                                                                                                                       |                        |                                                                          |
|                          | FREQUENCY RANGE                                                                                     | 47~63Hz                                                                                                                                                                                                              |                        |                                                                          |
|                          | POWER FACTOR (Typ.)                                                                                 | PF ≥ 0.95 / 230VAC at full load                                                                                                                                                                                      |                        |                                                                          |
|                          | EFFICIENCY (Typ.)                                                                                   | 92%                                                                                                                                                                                                                  | 92.5%                  | 93%                                                                      |
|                          | AC CURRENT (Typ.)                                                                                   | 20A/180VAC      16A/230VAC                                                                                                                                                                                           |                        |                                                                          |
|                          | INRUSH CURRENT (Typ.)                                                                               | Cold start 60A/230VAC                                                                                                                                                                                                |                        |                                                                          |
|                          | LEAKAGE CURRENT                                                                                     | <0.3mA / 240VAC                                                                                                                                                                                                      |                        |                                                                          |
| PROTECTION               | SHORT CIRCUIT                                                                                       | Shut down and latch off o/p voltage, re-power on to recover                                                                                                                                                          |                        |                                                                          |
|                          | OVER CURRENT                                                                                        | 105 ~ 120% rated output power<br>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) |                        |                                                                          |
|                          | 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 |                                                                                                                                                                                                                      |                        |                                                                          |
| FUNCTION                 | OUTPUT VOLTAGE PROGRAMMABLE(PV)                                                                     | Please refer to the Function Manual.                                                                                                                                                                                 |                        |                                                                          |
|                          | 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                                                                                                                                                                 |                        |                                                                          |
| ENVIRONMENT              | WORKING TEMP.                                                                                       | -20 ~ +65℃ (Refer to "Derating Curve")                                                                                                                                                                               |                        |                                                                          |
|                          | WORKING HUMIDITY                                                                                    | 20 ~ 90% RH non-condensing                                                                                                                                                                                           |                        |                                                                          |
|                          | STORAGE TEMP., HUMIDITY                                                                             | -40 ~ +85℃, 10 ~ 95% RH non-condensing                                                                                                                                                                               |                        |                                                                          |
|                          | TEMP. COEFFICIENT                                                                                   | ± 0.05%/℃ (0 ~ 50℃)                                                                                                                                                                                                  |                        |                                                                          |
|                          | VIBRATION                                                                                           | 10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes                                                                                                                                                         |                        |                                                                          |
| SAFETY & EMC<br>(Note 5) | SAFETY STANDARDS                                                                                    | UL62368-1, 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℃ / 70% RH                                                                                                                                                            |                        |                                                                          |
|                          | EMC EMISSION                                                                                        | Parameter                                                                                                                                                                                                            | Standard               | Test Level / Note                                                        |
|                          |                                                                                                     | Conducted                                                                                                                                                                                                            | BS EN/EN55032(CISPR32) | Class A                                                                  |
|                          |                                                                                                     | Radiated                                                                                                                                                                                                             | BS EN/EN55032(CISPR32) | Class A                                                                  |
|                          |                                                                                                     | Harmonic Current                                                                                                                                                                                                     | BS EN/EN61000-3-2      | -----                                                                    |
|                          |                                                                                                     | Voltage Flicker                                                                                                                                                                                                      | BS EN/EN61000-3-3      | -----                                                                    |
|                          | EMC IMMUNITY                                                                                        | BS EN/EN55035 ,BS EN/EN61000-6-2                                                                                                                                                                                     |                        |                                                                          |
|                          |                                                                                                     | Parameter                                                                                                                                                                                                            | Standard               | Test Level / Note                                                        |
|                          |                                                                                                     | ESD                                                                                                                                                                                                                  | BS EN/EN61000-4-2      | Level 3, 8KV air ; Level 2, 4KV contact                                  |
|                          |                                                                                                     | Radiated                                                                                                                                                                                                             | BS EN/EN61000-4-3      | Level 3                                                                  |
|                          |                                                                                                     | EFT / Burst                                                                                                                                                                                                          | BS EN/EN61000-4-4      | Level 3                                                                  |
|                          |                                                                                                     | Surge                                                                                                                                                                                                                | BS EN/EN61000-4-5      | Level 3, 2KV/Line-Earth ; Level 2, 1KV/Line-Line                         |
|                          |                                                                                                     | Conducted                                                                                                                                                                                                            | BS EN/EN61000-4-6      | Level 3                                                                  |
|                          |                                                                                                     | Magnetic Field                                                                                                                                                                                                       | BS EN/EN61000-4-8      | Level 4                                                                  |
|                          |                                                                                                     | Voltage Dips and Interruptions                                                                                                                                                                                       | BS EN/EN61000-4-11     | >95% dip 0.5 periods, 30% dip 25 periods, >95% interruptions 250 periods |
| OTHERS                   | MTBF                                                                                                | 721.1K hrs min.      Telcordia SR-332 (Bellcore) ; 80.5K hrs min.      MIL-HDBK-217F (25℃)                                                                                                                           |                        |                                                                          |
|                          | DIMENSION                                                                                           | 278*177.8*63.5mm (L*W*H)                                                                                                                                                                                             |                        |                                                                          |
|                          | PACKING                                                                                             | 4Kg; 4pcs/16Kg/1.39CUFT                                                                                                                                                                                              |                        |                                                                          |

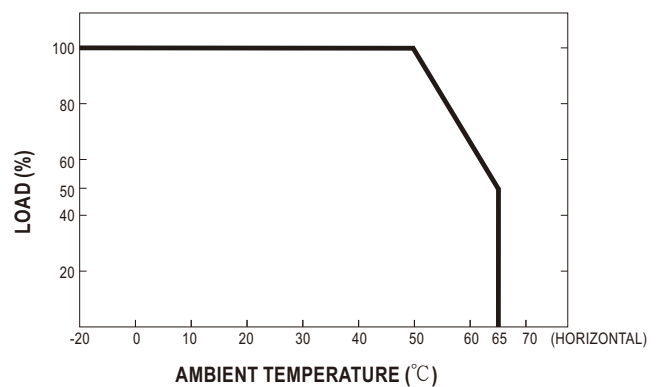
## Block Diagram



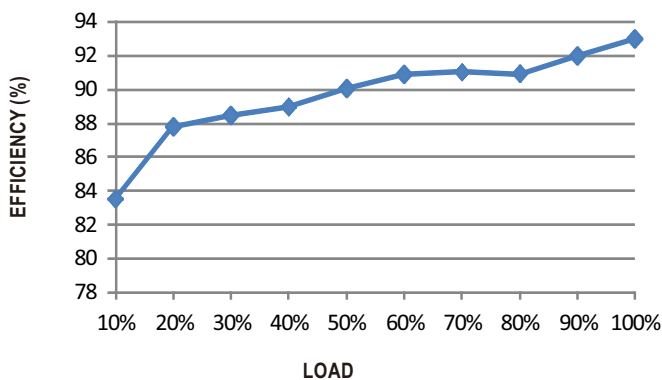
## Static Characteristics



## Derating Curve



## Efficiency vs Load (400V Model)

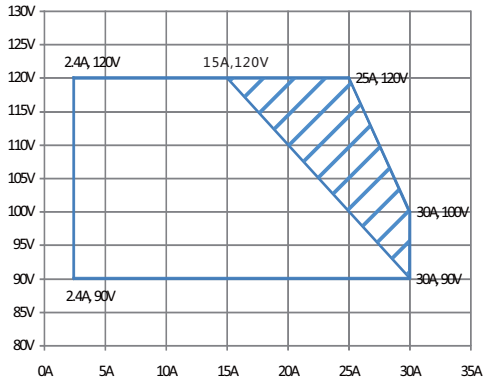


※ The curve above is measured at 230VAC.

## DRIVING METHODS OF LED MODULE

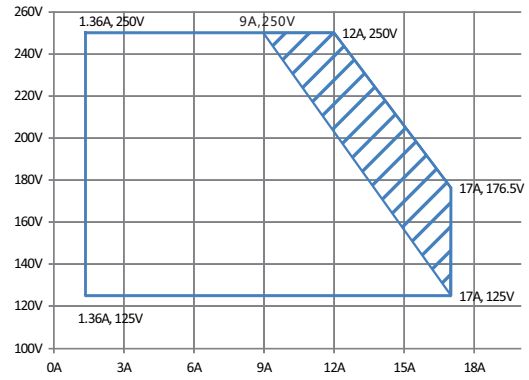
※ I-V Operating Area(for PC mode only)

◎ CSP-3000-120



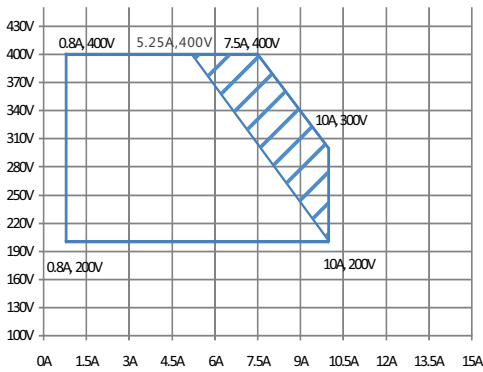
Recommended High Performance Region Allowed Operational Region

◎ CSP-3000-250



Recommended High Performance Region Allowed Operational Region

◎ CSP-3000-400



Recommended High Performance Region Allowed Operational Region

## Function Manual

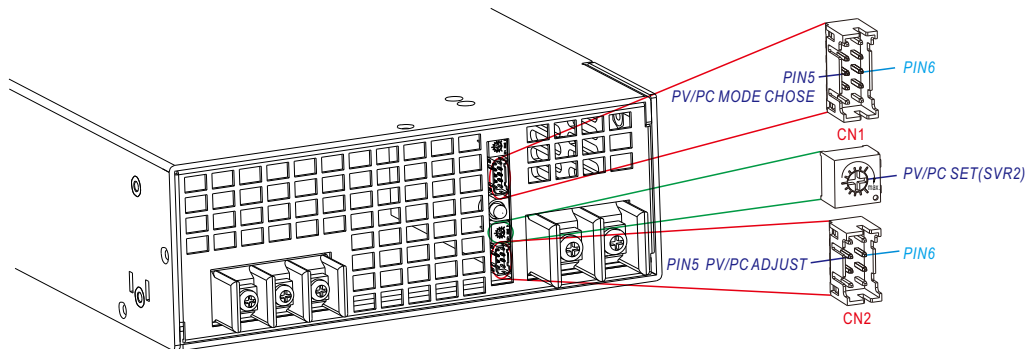
### 1. Output Voltage/Current Programming

※ Mode Setting

CN1:

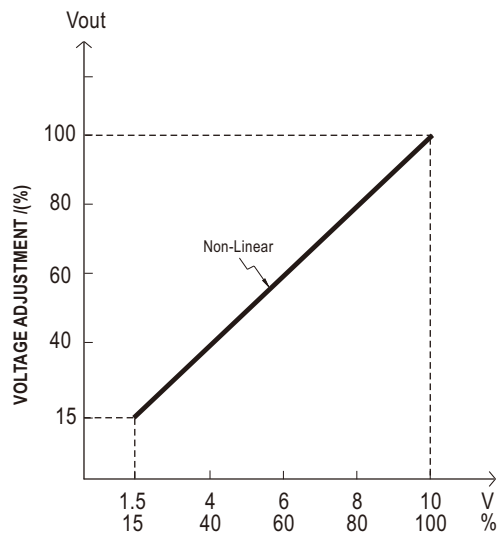
|           | CONDITION | MODE    | FUNCTION                   |
|-----------|-----------|---------|----------------------------|
| PIN5/PIN6 | SHORT     | PV MODE | Output Voltage Programming |
|           | OPEN      | PC MODE | Output Current Programming |

※ 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.

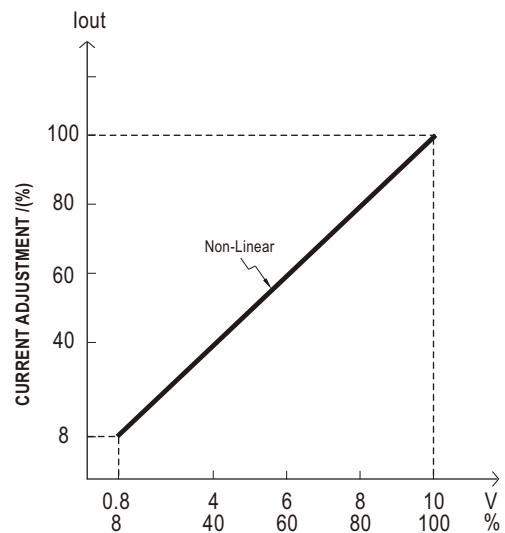


※ PV/PC Set adjustment

- 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 EXTERNAL VOLTAGE SIGNALS(DC/PWM)

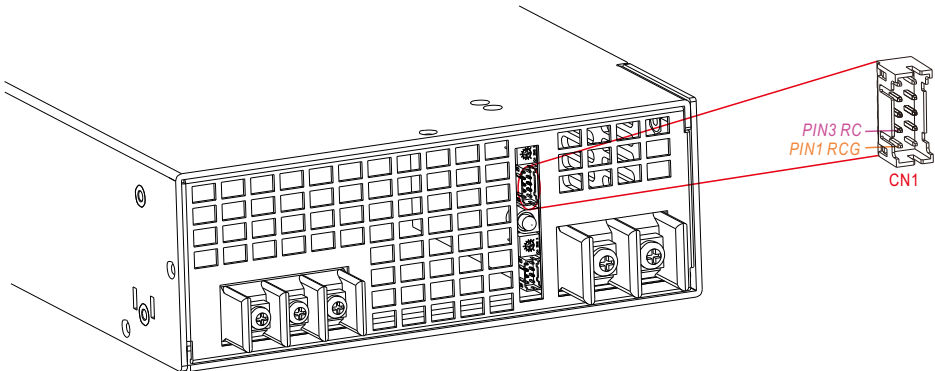


PIN5/PIN6 ACCESS TO EXTERNAL VOLTAGE SIGNALS(DC/PWM)

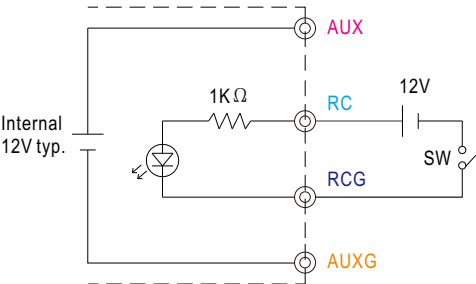
| MODEL    | 120V            | 250V              | 400V            |
|----------|-----------------|-------------------|-----------------|
| PV range | 18 ~ 120V(max.) | 37.5 ~ 250V(max.) | 60 ~ 400V(max.) |
| PC range | 2.4 ~ 30A(max.) | 1.4~ 17A(max.)    | 0.8 ~ 10A(max.) |

## 2.Remote ON-OFF

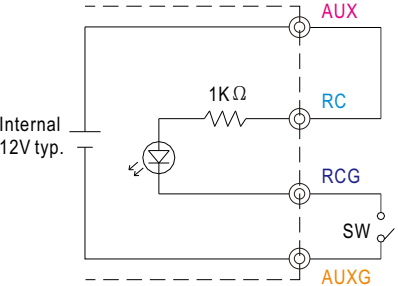
※ Remote ON-OFF is activated by the configuration with respect to CN1 as shown in the following diagram.



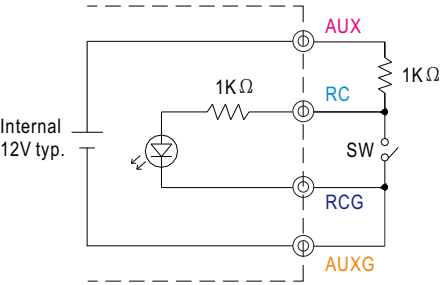
Example 2.2(A): Using external voltage source



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



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

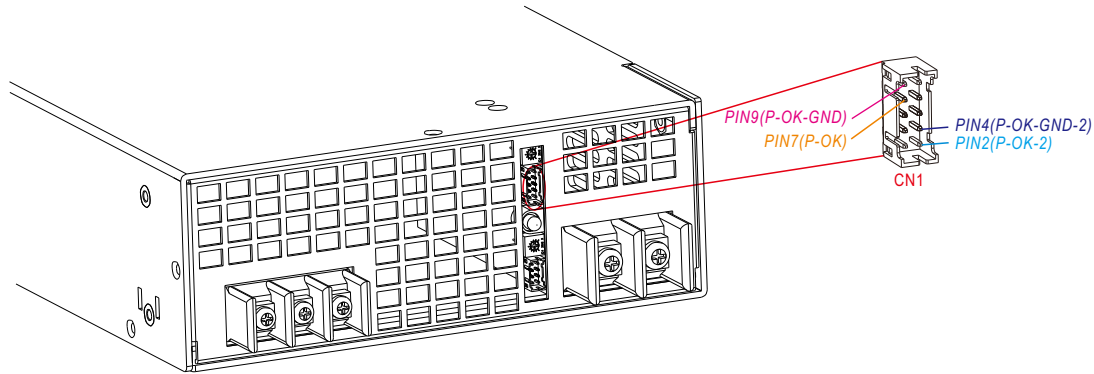


© Connection Method

|          |                         | 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)   |

## 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

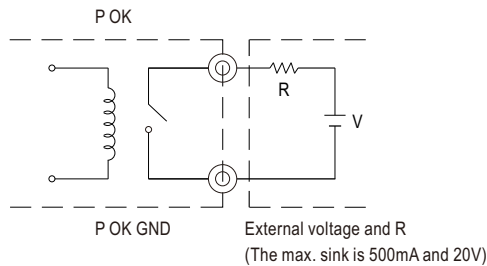


Fig. 3.2 Internal circuit of P OK (Relay, total is 10W)

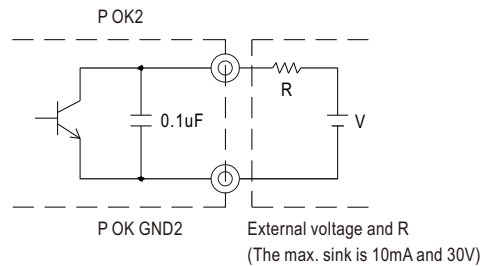


Fig. 3.3 Internal circuit of P OK2 (Open collector method)

## 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".

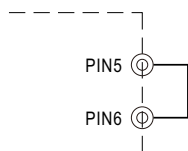


Fig. 4.1 Insert the CN1  
Overload Protection Type : constant current limiting with delay shutdown after 3 seconds

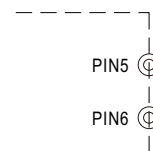


Fig. 4.2 Remove the CN1  
Overload Protection Type : constant current limiting

## 5.Parallel

CSP-3000 can be connected in parallel, up to 3units, to provide higher output power.

When working in constant voltage parallel mode:

- ※ Built-in active current sharing function
- ※ 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% rate 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).
- ※ The "PV/PC" function is not available.

When working in constant current parallel mode:

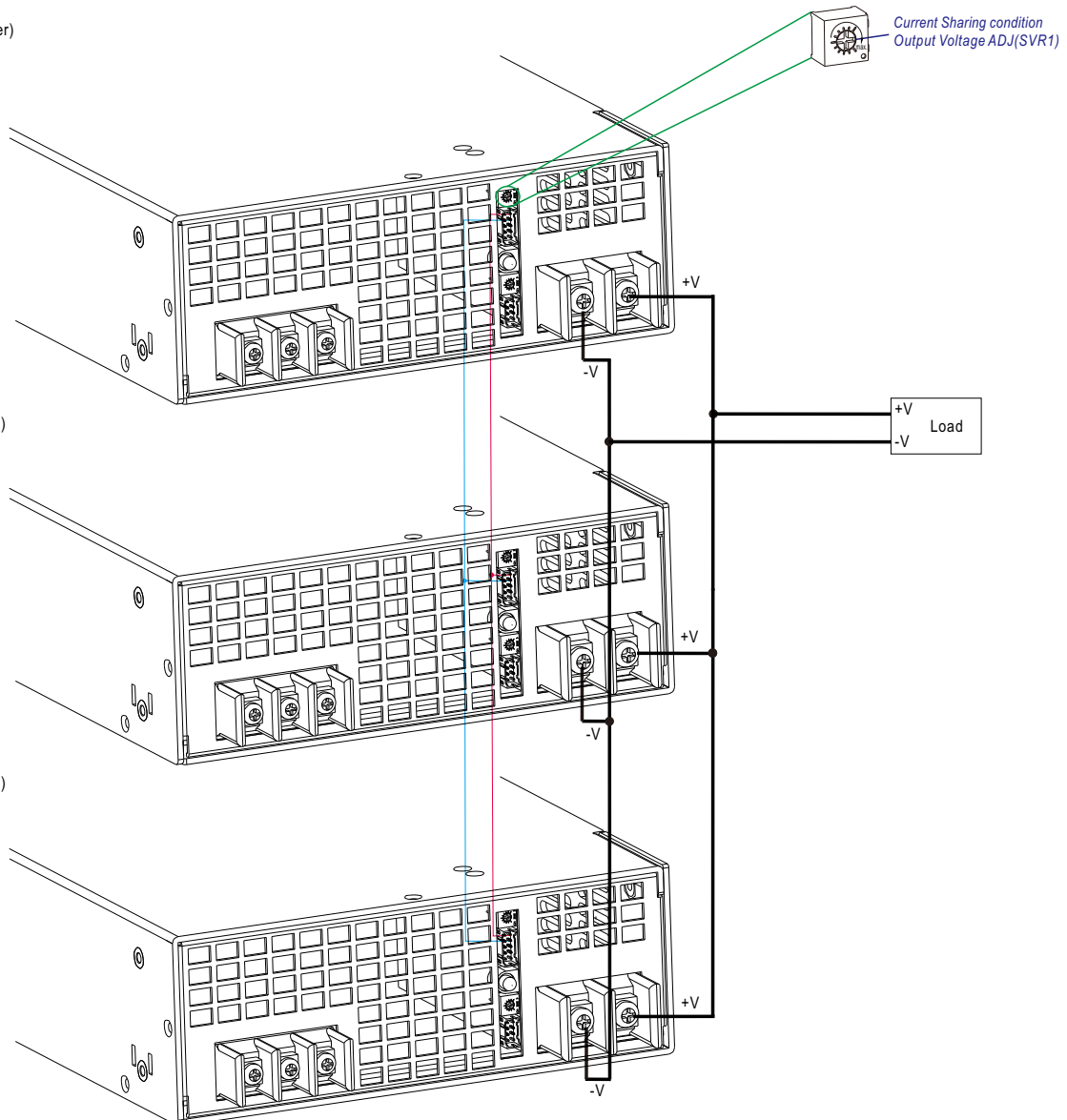
- ※ The load carried by each power supply cannot exceed 90% of the rated power
- ※ The "PC" function can be used ,but the "PV" function is not available.

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

No.1(Master)

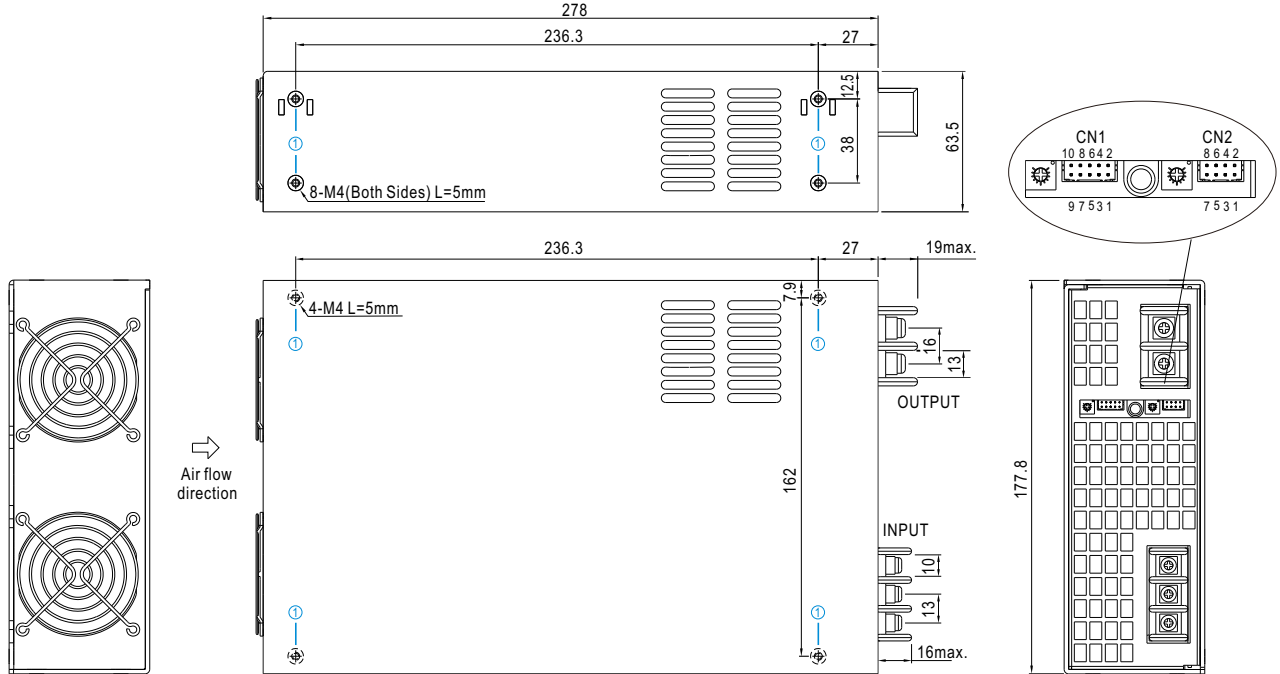
No.2(Slave)

No.3(Slave)



## Mechanical Specification

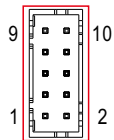
Case No.982B Unit:mm



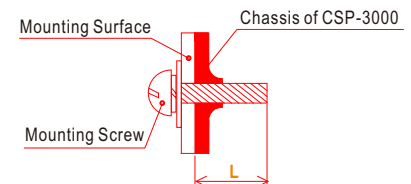
### ※ Mounting Instruction

| 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

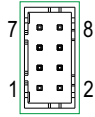


|                |                             |
|----------------|-----------------------------|
| Mating Housing | HRS DF11-10DS or equivalent |
| Terminal       | HRS DF11-**SC or equivalent |



| 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 DF11-8SC 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<br>(Cycle 1.4S)                    |            | Standby power supply (Remote off)               |
| Red LED of flash<br>(Cycle 200mS)                       |            | Power OVP, output voltage too low               |
| Red LED slow flash<br>(Cycle 1.4S)                      |            | NTC fault, power OTP, temperature switch action |
| Red LED normal                                          |            | Power fan fault                                 |
| Red LED of flash<br>(Cycle 200mS)<br>Green LED of flash |            | Line fault, CN2 pin 7/8 signal abnormal         |

※AC Input Terminal Pin No. Assignment

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

※DC Output Terminal Pin No. Assignment

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

## ■ Installation Manual

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