



■ Features :

- Universal AC input / Full range
- Built-in active PFC function, PF>0.94
- High efficiency up to 89%
- Withstand 300VAC surge input for 5 seconds
- Protections: Short circuit / Overload / Over voltage / Over temperature
- Medical safety approved (MOOP level)
- Built-in cooling fan ON-OFF control
- Built-in DC OK signal
- Built-in remote ON-OFF control
- Standby 5V@0.3A
- Built-in remote sense function
- No load power consumption<0.8W (Note.7)
- Current sharing up to 2400W (3+1) (24V,36V,48V)
- 5 years warranty

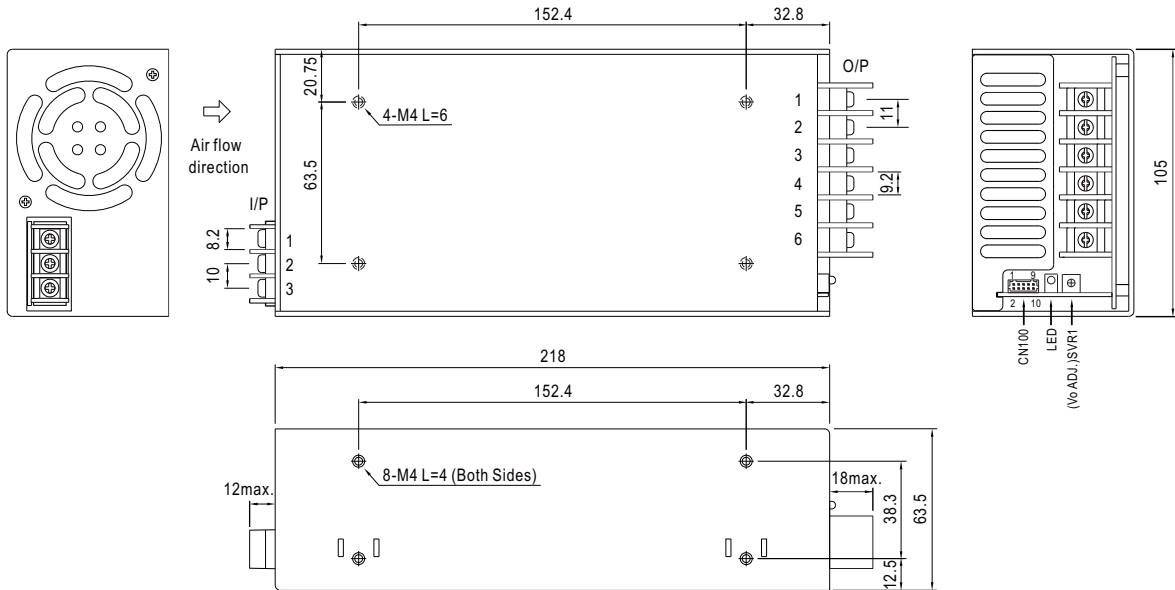


SPECIFICATION

| MODEL                 | MSP-600-3.3                               | MSP-600-5  | MSP-600-7.5 | MSP-600-12           | MSP-600-15                  | MSP-600-24     | MSP-600-36   | MSP-600-48   |              |  |
|-----------------------|---|--|-------------|----------------------|-----------------------------|----------------|--------------|--------------|--------------|--|
| OUTPUT                | DC VOLTAGE                                | 3.3V   | 5V          | 7.5V                 | 12V                         | 15V            | 24V          | 36V          | 48V          |  |
|                       | RATED CURRENT                             | 120A   | 120A        | 80A                  | 53A                         | 43A            | 27A          | 17.5A        | 13A          |  |
|                       | CURRENT RANGE                             | 0 ~ 120A   | 0 ~ 120A    | 0 ~ 80A              | 0 ~ 53A                     | 0 ~ 43A        | 0 ~ 27A      | 0 ~ 17.5A    | 0 ~ 13A      |  |
|                       | RATED POWER                               | 396W   | 600W        | 600W                 | 636W                        | 645W           | 648W         | 630W         | 624W         |  |
|                       | RIPPLE & NOISE (max.) Note.2              | 120mVp-p   | 150mVp-p    | 150mVp-p             | 150mVp-p                    | 150mVp-p       | 150mVp-p     | 200mVp-p     | 240mVp-p     |  |
|                       | VOLTAGE ADJ. RANGE                        | 2.8 ~ 3.8V   | 4.3 ~ 5.8V  | 6.8 ~ 9V             | 10.2 ~ 13.8V                | 13.5 ~ 18V     | 21.6 ~ 28.8V | 28.8 ~ 39.6V | 40.8 ~ 55.2V |  |
|                       | VOLTAGE TOLERANCE Note.3                  | ±2.0%  | ±2.0%       | ±2.0%                | ±1.0%                       | ±1.0%          | ±1.0%        | ±1.0%        | ±1.0%        |  |
|                       | LINE REGULATION                           | ±0.5%  | ±0.5%       | ±0.5%                | ±0.3%                       | ±0.3%          | ±0.2%        | ±0.2%        | ±0.2%        |  |
|                       | LOAD REGULATION                           | ±1.0%  | ±1.0%       | ±1.0%                | ±0.5%                       | ±0.5%          | ±0.5%        | ±0.5%        | ±0.5%        |  |
|                       | SETUP, RISE TIME                          | 1000ms, 50ms/230VAC      2500ms, 50ms/115VAC at full load  |             |                      |                             |                |              |              |              |  |
| HOLD UP TIME (Typ.)   | 16ms/230VAC      16ms/115VAC at full load |  |             |                      |                             |                |              |              |              |  |
| INPUT                 | VOLTAGE RANGE Note.5                      | 85 ~ 264VAC  |             | 120 ~ 370VDC         |                             |                |              |              |              |  |
|                       | FREQUENCY RANGE                           | 47 ~ 63Hz  |             |                      |                             |                |              |              |              |  |
|                       | POWER FACTOR (Typ.)                       | PF>0.94/230VAC   |             |                      | PF>0.99/115VAC at full load |                |              |              |              |  |
|                       | EFFICIENCY (Typ.)                         | 78.5%  | 82%         | 86%                  | 88%                         | 88%            | 88%          | 89%          | 89%          |  |
|                       | AC CURRENT (Typ.)                         | 8.5A/115VAC  |             | 5A/230VAC            |                             |                |              |              |              |  |
|                       | INRUSH CURRENT (Typ.)                     | 35A/115VAC   |             | 80A/230VAC           |                             |                |              |              |              |  |
| PROTECTION            | LEAKAGE CURRENT                           | Earth leakage current < 300µA/264VAC , Touch leakage current < 100µA/264VAC  |             |                      |                             |                |              |              |              |  |
|                       | OVERLOAD                                  | 105 ~ 135% rated output power<br>Protection type : Constant current limiting, recovers automatically after fault condition is removed  |             |                      |                             |                |              |              |              |  |
|                       | OVER VOLTAGE                              | 3.96 ~ 4.62V   | 6 ~ 7V      | 9.4 ~ 10.9V          | 14.4 ~ 16.8V                | 18.8 ~ 21.8V   | 30 ~ 34.8V   | 41.4 ~ 48.6V | 57.6 ~ 67.2V |  |
| FUNCTION              | OVER TEMPERATURE                          | Protection type : Shut down o/p voltage, re-power on to recover<br>Shut down o/p voltage, recovers automatically after temperature goes down   |             |                      |                             |                |              |              |              |  |
|                       | 5V STANDBY                                | 5VSB : 5V@0.3A ; tolerance ±5%, ripple : 50mVp-p(max.)   |             |                      |                             |                |              |              |              |  |
|                       | DC OK SIGNAL                              | PSU turn on : 3.3 ~ 5.6V ; PSU turn off : 0 ~ 1V   |             |                      |                             |                |              |              |              |  |
|                       | REMOTE CONTROL                            | RC+ / RC- : 4 ~ 10V or open = power on ; 0 ~ 0.8V or short = power off   |             |                      |                             |                |              |              |              |  |
| ENVIRONMENT           | FAN CONTROL (Typ.)                        | Load 35±15% or RTH2≥50°C Fan on  |             |                      |                             |                |              |              |              |  |
|                       | WORKING TEMP.                             | -40 ~ +70°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                         | ±0.03%/°C (0 ~ 50°C)   |             |                      |                             |                |              |              |              |  |
| SAFETY & EMC (Note 4) | VIBRATION                                 | 10 ~ 500Hz, 5G 10min./1cycle, 60min. each along X, Y, Z axes   |             |                      |                             |                |              |              |              |  |
|                       | SAFETY STANDARDS                          | ANSI/AAMI ES60601-1, IEC60601-1, EAC TP TC 004 approved  |             |                      |                             |                |              |              |              |  |
|                       | ISOLATION LEVEL                           | Primary-Secondary: 2×MOOP, Primary-Earth: 1×MOOP, Secondary-Earth: 1×MOOP  |             |                      |                             |                |              |              |              |  |
|                       | WITHSTAND VOLTAGE                         | I/P-O/P:4KVAC  |             | 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                              | Compliance to EN55011 (CISPR11) Class B, EN61000-3-2,-3, EAC TP TC 020   |             |                      |                             |                |              |              |              |  |
| OTHERS                | EMC IMMUNITY                              | Compliance to EN61000-4-2,3,4,5,6,8,11, EN60601-1-2, EAC TP TC 020   |             |                      |                             |                |              |              |              |  |
|                       | MTBF                                      | 138.7K hrs min.  |             | MIL-HDBK-217F (25°C) |                             |                |              |              |              |  |
|                       | DIMENSION                                 | 218*105*63.5mm (L*W*H)   |             |                      |                             |                |              |              |              |  |
| NOTE                  | PACKING                                   | 1.57Kg;8pcs/13.6Kg/1.34CUFT  |             |                      |                             |                |              |              |              |  |
|                       | NOTE                                      | <ol style="list-style-type: none"> <li>1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature.</li> <li>2. Ripple &amp; noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1µf &amp; 47µf parallel capacitor.</li> <li>3. Tolerance : includes set up tolerance, line regulation and load regulation.</li> <li>4. 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 360mm*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>)</li> <li>5. Derating may be needed under low input voltages. Please check the derating curve for more details.</li> <li>6. Length of set up time is measured at first cold start. Turning ON/OFF the power supply may lead to increase of the set up time.</li> <li>7. No load power consumption&lt;0.8W when RC+ &amp; RC- (CN100 pin3,4) 0 ~ 0.8V or short.</li> <li>8. When the input voltage is less than 40VAC, the SPS may exhibit degradation of performance. The final product manufacturers must re-confirm this deviation that does not affect basic safety or essential performance.</li> <li>9. 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).</li> </ol> |             |                      |                             |                |              |              |              |  |

### Mechanical Specification

Case No. 977A Unit:mm



AC Input Terminal Pin No. Assignment

| Pin No. | Assignment |
|---------|------------|
| 1       | AC/L       |
| 2       | AC/N       |
| 3       | FG $\perp$ |

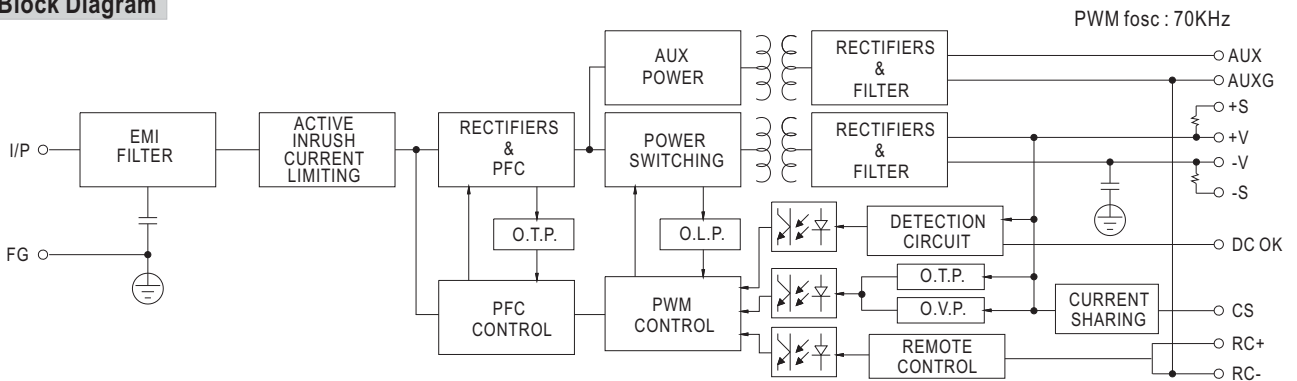
DC Output Terminal Pin No. Assignment

| Pin No. | Assignment |
|---------|------------|
| 1~3     | -V         |
| 4~6     | +V         |

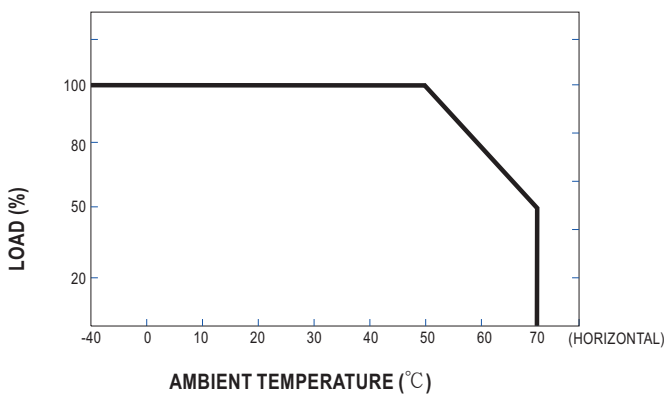
Connector Pin No. Assignment (CN100) : HRS DF11-10DP-2DS or equivalent

| Pin No. | Assignment | Pin No. | Assignment | Mating Housing              | Terminal                    |
|---------|------------|---------|------------|-----------------------------|-----------------------------|
| 1       | AUXG       | 6,8     | GND        | HRS DF11-10DS or equivalent | HRS DF11-**SC or equivalent |
| 2       | AUX        | 7       | DC-OK      |                             |                             |
| 3       | RC+        | 9       | +S         |                             |                             |
| 4       | RC-        | 10      | -S         |                             |                             |
| 5       | CS         |         |            |                             |                             |

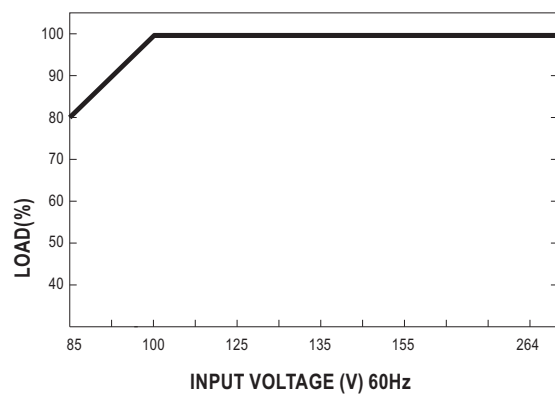
### Block Diagram



### Derating Curve



### Output Derating VS Input Voltage



■ Function Description of CN100

| Pin No. | Function | Description   |
|---------|----------|---|
| 1       | AUXG     | Auxiliary voltage output ground. The signal return is isolated from the output terminals (+V & -V).   |
| 2       | AUX      | Auxiliary voltage output, 4.75~5.25V, referenced to pin 1(AUXG). The maximum load current is 0.3A. This output is not controlled by the "remote ON/OFF control".  |
| 3       | RC+      | Turns the output on and off by electrical or dry contact between pin 4 (RC-), Short: Power OFF, Open: Power ON.   |
| 4       | RC-      | Remote control ground.  |
| 5       | CS       | Current sharing signal. When units are connected in parallel, the CS pins of the units should be connected to allow current balance between units.  |
| 6,8     | GND      | This pin connects to the negative terminal(-V). Return for DC-OK signal output.   |
| 7       | DC-OK    | DC-OK signal is a TTL level signal, referenced to pin8(DC-OK GND). High when PSU turns on.  |
| 9       | +S       | Positive sensing. The +S signal should be connected to the positive terminal of the load. The +S and -S leads should be twisted in pair to minimize noise pick-up effect. The maximum line drop compensation is 0.5V. |
| 10      | -S       | Negative sensing. The -S signal should be connected to the negative terminal of the load. The -S and +S leads should be twisted in pair to minimize noise pick-up effect. The maximum line drop compensation is 0.5V. |

■ Function Manual

1. Remote Sense

The remote sensing compensates voltage drop on the load wiring up to 0.5V.

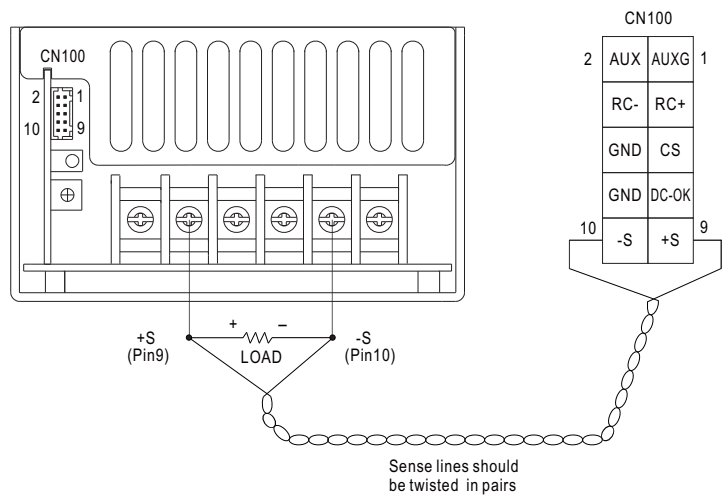


Fig 1.1

2. DC-OK Signal

DC-OK signal is a TTL level signal. High when PSU turns on.

| Between DC-OK(pin7) and GND(pin6,8) | Output Status |
|-------------------------------------|---------------|
| 3.3 ~ 5.6V                          | ON            |
| 0 ~ 1V                              | OFF           |

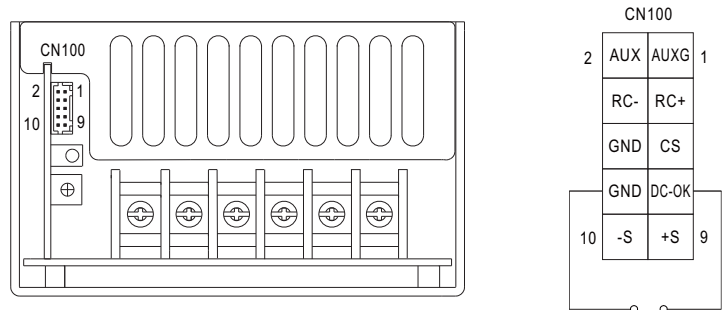


Fig 2.1

**3.Remote Control**

The PSU can be turned ON/OFF by using the "Remote Control" function.

| Between RC+(pin3) and RC-(pin4) | Output Status |
|---------------------------------|---------------|
| SW ON (Short)                   | OFF           |
| SW OFF (Open)                   | ON            |

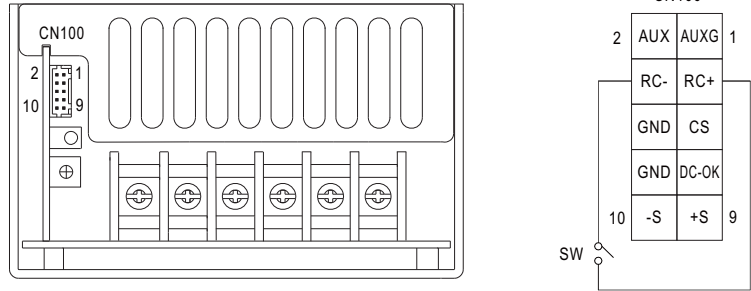


Fig 3.1

**4.Current Sharing with Remote Sensing (Only for 24V, 36V and 48V)**

MSP-600 has the built-in active current sharing function and can be connected in parallel to provide higher output power :

- (1) Parallel operation is available by connecting the units shown as below.  
(+S, -S, CS and GND are connected mutually in parallel).
- (2) Difference of output voltages among parallel units should be less than 2%.
- (3) The total output current must not exceed the value determined by the following equation.  
(output current at parallel operation)=(Rated current per unit)×(Number of unit)×0.9
- (4) In parallel operation 4 units is the maximum, please consult the manufacturer for applications of more connecting in parallel.
- (5) The power supplies should be paralleled using short and large diameter wiring and then connected to the load.

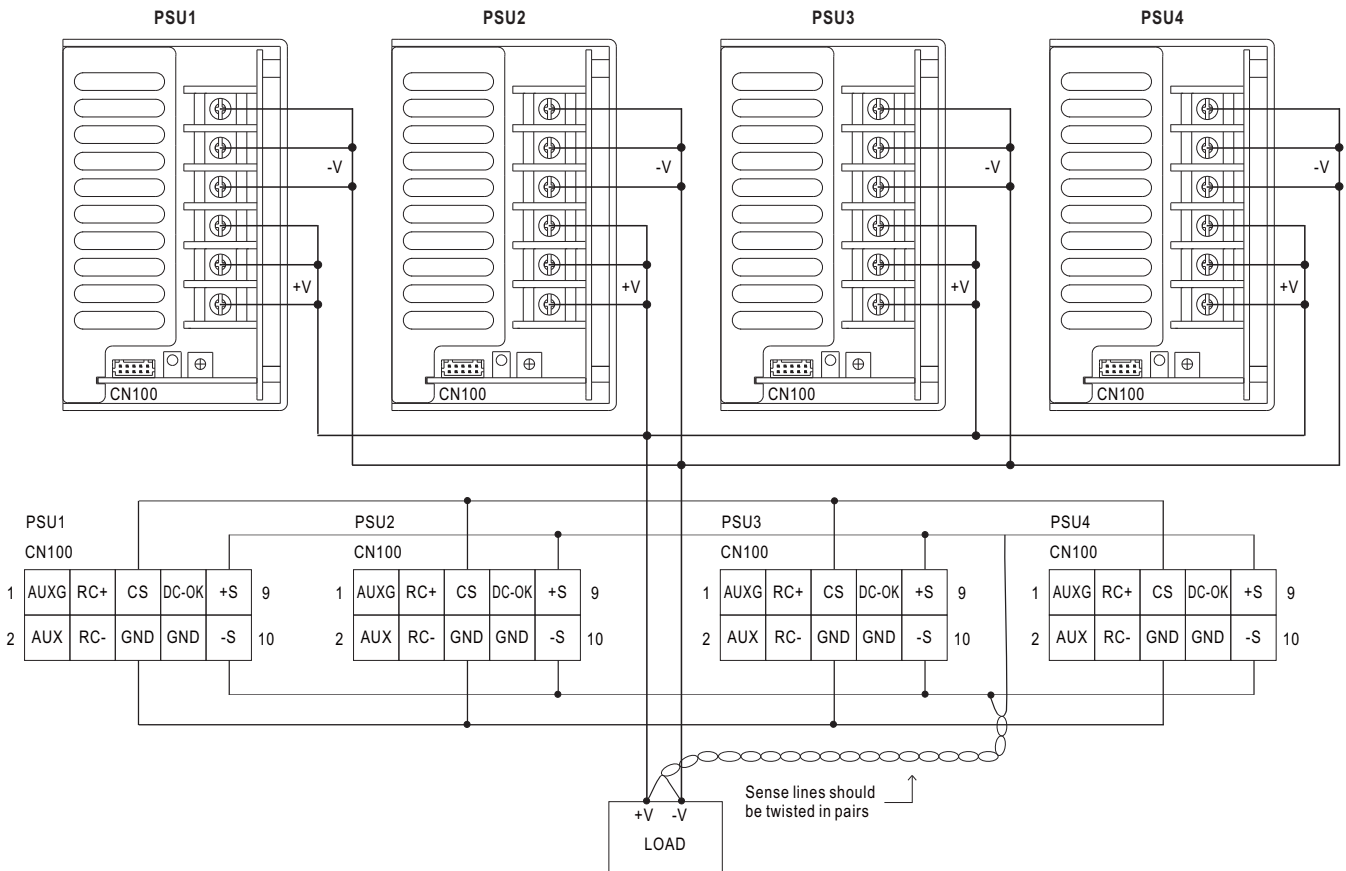


Fig 4.1

Note : 1. In parallel connection, maybe only one unit (master) operate if the total output load is less than 2% of rated load condition.  
The other PSU (slave) may go into standby mode and its output LED and relay will not turn on.  
2.2% min. of dummy load is required.