



■ Features :

- Universal AC input / Full range
- Built in active PFC circuit compliance to EN61000-3-2
- Protections: Short circuit / Overload / Over voltage / Over temperature
- Free air convection for 400W and 500W with 23.5CFM forced air
- High power density 6.2w/in<sup>3</sup>
- AC input active surge current limiting
- U-bracket low profile:41mm
- Current sharing(1+1) for 24V and 48V models (Optional)
- Built-in remote ON-OFF control
- Built-in remote sense function
- Built in DC OK active signal
- 3 years warranty

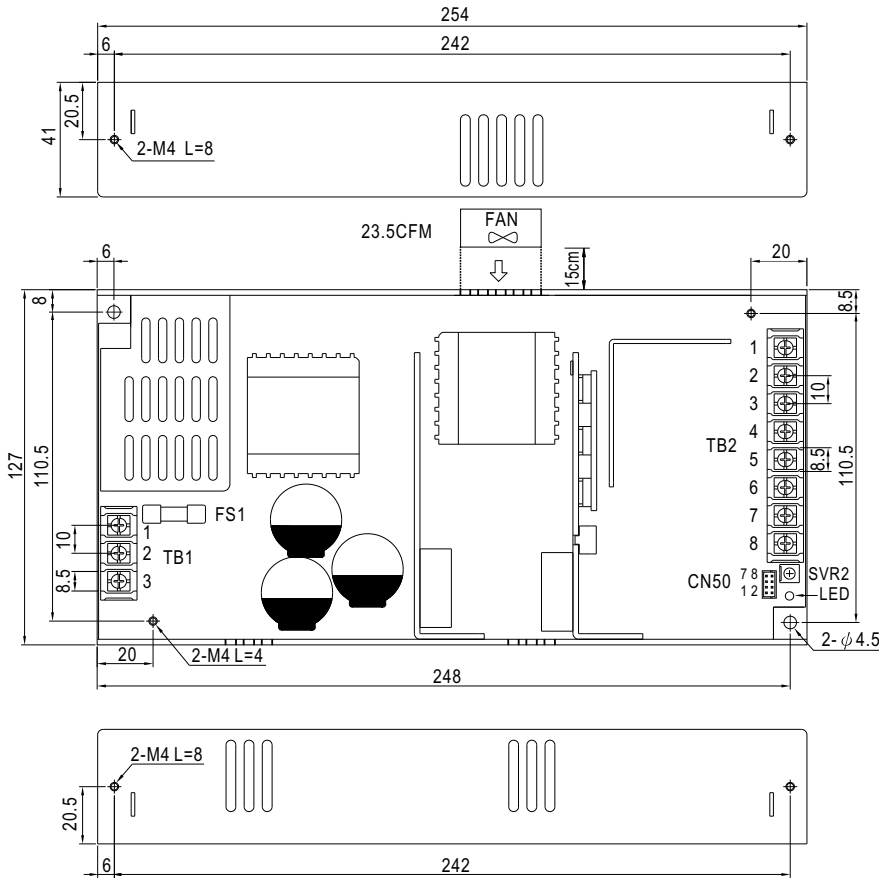


SPECIFICATION

| MODEL                 | USP-500-5  | USP-500-12   | USP-500-15               | USP-500-24   | USP-500-48   |              |
|-----------------------|--|--|--------------------------|--------------|--------------|--------------|
| OUTPUT                | DC VOLTAGE   | 5V   | 12V                      | 15V          | 24V          | 48V          |
|                       | RATED CURRENT  | 80A  | 42A                      | 33.5A        | 21A          | 10.5A        |
|                       | CURRENT RANGE (convection)   | 0 ~ 60A  | 0 ~ 33A                  | 0 ~ 27A      | 0 ~ 17A      | 0 ~ 8.5A     |
|                       | CURRENT RANGE (23.5CFM FAN)  | 0 ~ 80A  | 0 ~ 42A                  | 0 ~ 33.5A    | 0 ~ 21A      | 0 ~ 10.5A    |
|                       | RATED POWER (convection)   | 300W   | 396W                     | 405W         | 408W         | 408W         |
|                       | RATED POWER (23.5CFM FAN)  | 400W   | 504W                     | 502.5W       | 504W         | 504W         |
|                       | RIPPLE & NOISE (max.) Note.2   | 80mVp-p  | 100mVp-p                 | 100mVp-p     | 150mVp-p     | 150mVp-p     |
|                       | VOLTAGE ADJ. RANGE   | 4.5 ~ 5.5V   | 10.8 ~ 13.2V             | 13.5 ~ 16.5V | 21.6 ~ 27V   | 43.2 ~ 52.8V |
|                       | VOLTAGE TOLERANCE Note.3   | ±2.0%  | ±2.0%                    | ±2.0%        | ±2.0%        | ±2.0%        |
|                       | LINE REGULATION  | ±0.5%  | ±0.5%                    | ±0.5%        | ±0.5%        | ±0.5%        |
|                       | LOAD REGULATION  | ±2.0%  | ±1.0%                    | ±1.0%        | ±1.0%        | ±1.0%        |
|                       | SETUP, RISE TIME   | 1500ms, 80ms/230VAC      3100ms, 80ms/115VAC at full load  |                          |              |              |              |
| HOLD UP TIME (Typ.)   | 20ms/230VAC      20ms/115VAC at full load  |  |                          |              |              |              |
| INPUT                 | VOLTAGE RANGE Note.5   | 90 ~ 264VAC  | 127 ~ 370VDC             |              |              |              |
|                       | FREQUENCY RANGE  | 47 ~ 63Hz  |                          |              |              |              |
|                       | POWER FACTOR (Typ.)  | 0.95/230VAC  | 0.98/115VAC at full load |              |              |              |
|                       | EFFICIENCY (Typ.)  | 85%  | 90%                      | 90%          | 89%          | 90%          |
|                       | AC CURRENT (Typ.)  | 6A/115VAC  | 2.6A/230VAC              |              |              |              |
|                       | INRUSH CURRENT (Typ.)  | 30A/115VAC   | 50A/230VAC               |              |              |              |
|                       | LEAKAGE CURRENT  | <2mA / 240VAC  |                          |              |              |              |
| PROTECTION            | OVERLOAD   | 105 ~ 130% rated output power<br>Protection type : Constant current limiting, unit will shut down after 3 sec. ,re-power on to recover   |                          |              |              |              |
|                       | OVER VOLTAGE   | 5.7 ~ 7V   | 13.5 ~ 16V               | 17 ~ 21V     | 27.8 ~ 32.4V | 53 ~ 64.8V   |
|                       | OVER TEMPERATURE   | 85°C ±5°C (TSW1 : detect on heatsink of o/p diode)<br>95°C ±5°C (5V), 100°C (12V, 15V, 24V, 48V) (TSW2 : detect on heatsink of power transistor)<br>Protection type : Shut down o/p voltage with auto-recovery |                          |              |              |              |
| FUNCTION              | REMOTE ON/OFF CONTROL  | RC+/RC-: 0~0.8V power on ; 4~10V power off   |                          |              |              |              |
|                       | DC-OK SIGNAL   | PSU turn on : 3.3V ~ 5.6V ; PSU turn off: 0 ~ 1V   |                          |              |              |              |
| ENVIRONMENT           | WORKING TEMP.  | -20 ~ +70°C (Refer to output load derating curve)  |                          |              |              |              |
|                       | WORKING HUMIDITY   | 20 ~ 90% RH non-condensing   |                          |              |              |              |
|                       | STORAGE TEMP., HUMIDITY  | -40 ~ +85°C, 10 ~ 95% RH   |                          |              |              |              |
|                       | TEMP. COEFFICIENT  | ±0.03%/°C (0 ~ 50°C)   |                          |              |              |              |
|                       | VIBRATION  | 10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes   |                          |              |              |              |
| SAFETY & EMC (Note 4) | SAFETY STANDARDS   | UL60950-1, TUV EN60950-1 approved  |                          |              |              |              |
|                       | WITHSTAND VOLTAGE  | I/P-O/P:3KVAC I/P-FG:1.5KVAC O/P-FG:0.5KVAC  |                          |              |              |              |
|                       | ISOLATION RESISTANCE   | I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25°C / 70% RH   |                          |              |              |              |
|                       | EMI CONDUCTION & RADIATION   | Compliance to EN55022 (CISPR22) Class B  |                          |              |              |              |
|                       | HARMONIC CURRENT   | Compliance to EN61000-3-2,-3   |                          |              |              |              |
| OTHERS                | EMS IMMUNITY   | Compliance to EN61000-4-2,3,4,5,6,8,11, ENV50204, EN55024, EN61000-6-2, heavy industry level, criteria A   |                          |              |              |              |
|                       | MTBF   | 129.8K hrs min. MIL-HDBK-217F (25°C)   |                          |              |              |              |
|                       | DIMENSION  | 254*127*41mm (L*W*H)   |                          |              |              |              |
|                       | PACKING  | 1.6Kg; 6pcs/10.6Kg/0.67CUFT  |                          |              |              |              |
| NOTE                  | <p>1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature.</p> <p>2. Ripple &amp; noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf &amp; 47uf parallel capacitor.</p> <p>3. Tolerance : includes set up tolerance, line regulation and load regulation.</p> <p>4. The power supply is considered a component which will be installed into a final equipment. 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."<br/>(as available on <a href="http://www.meanwell.com">http://www.meanwell.com</a>)</p> <p>5. Derating may be needed under low input voltages. Please check the derating curve for more details.</p> |  |                          |              |              |              |

## Mechanical Specification

Case No. 963A-D Unit:mm



### AC Input Terminal Pin No. Assignment

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

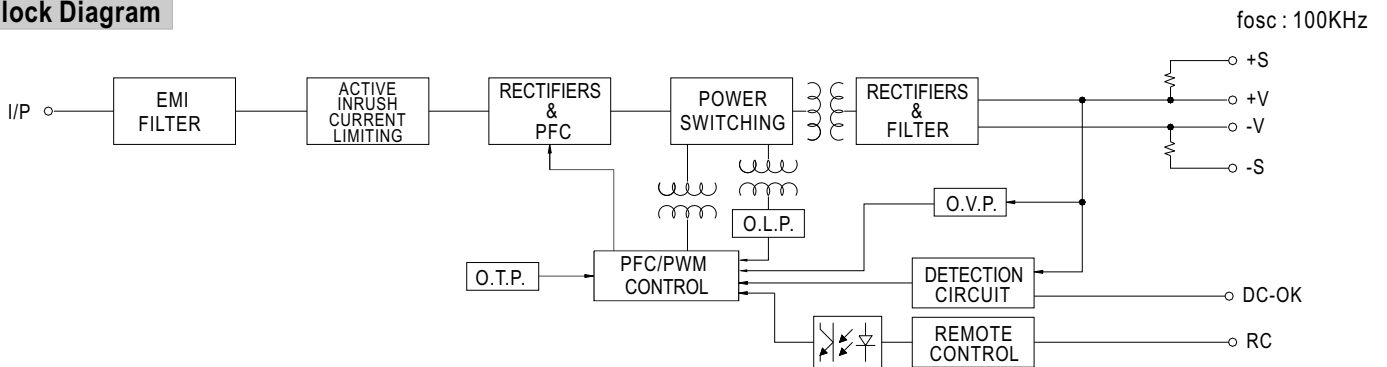
### DC Output Terminal Pin No. Assignment

| Pin No. | Assignment   |
|---------|--------------|
| 1~4     | DC OUTPUT -V |
| 5~8     | DC OUTPUT +V |

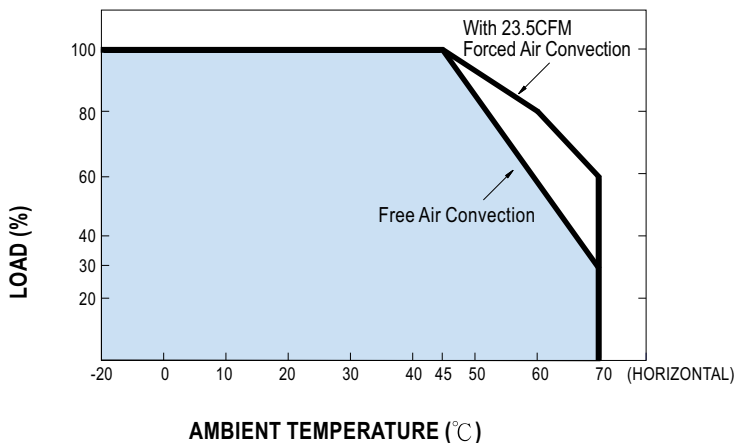
### Connector Pin No. Assignment (CN50) : JST B8B-PHDSS or equivalent

| Pin No. | Assignment   | Mating Housing             | Terminal                         |
|---------|--------------|----------------------------|----------------------------------|
| 1       | CS(Optional) | JST PHD-08VS or equivalent | JST SPHD-002T-P0.5 or equivalent |
| 2,8     | -S           |                            |                                  |
| 3       | RC-          |                            |                                  |
| 4       | RC+          |                            |                                  |
| 5       | GND          |                            |                                  |
| 6       | DC-OK        |                            |                                  |
| 7       | +S           |                            |                                  |

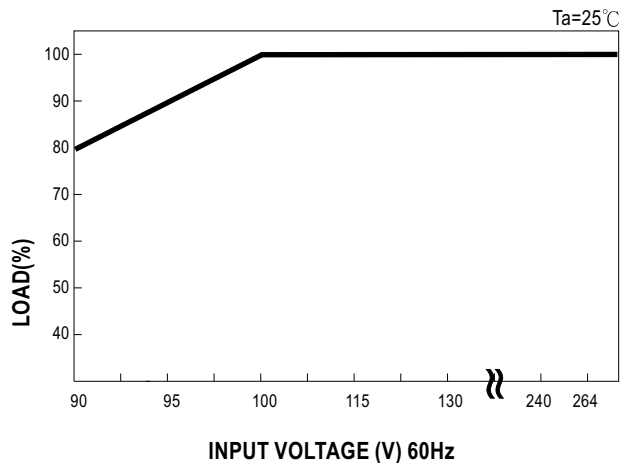
## Block Diagram



## Derating Curve



## Static Characteristics



■ Function Description of CN50

| Pin No. | Function      | Description   |
|---------|---------------|---|
| 1       | CS (Optional) | Current sharing signal. When units are connected in parallel, the CS pins of the units should be connected to allow current balance between units.  |
| 2,8     | -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. |
| 3       | RC-           | Return for RC+ signal input.  |
| 4       | RC+           | Turns the output on and off by electrical or dry contact between pin 4 (RC+) and pin 3 (RC-). 0~0.8V: Power ON, 4~10V: Power OFF.   |
| 5       | GND           | This pin connects to the negative terminal (-V). Return for DC_OK signal output.  |
| 6       | DC-OK         | DC-OK signal is a TTL level signal, referenced to pin6(DC-OK GND). High when PSU turns on.  |
| 7       | +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. |

■ Function Manual

1. Remote Control

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

| Between RC+(pin4) and RC-(pin3) | Output Status |
|---------------------------------|---------------|
| SW OFF (0 ~ 0.8V)               | ON            |
| SW ON (4 ~ 10V)                 | OFF           |

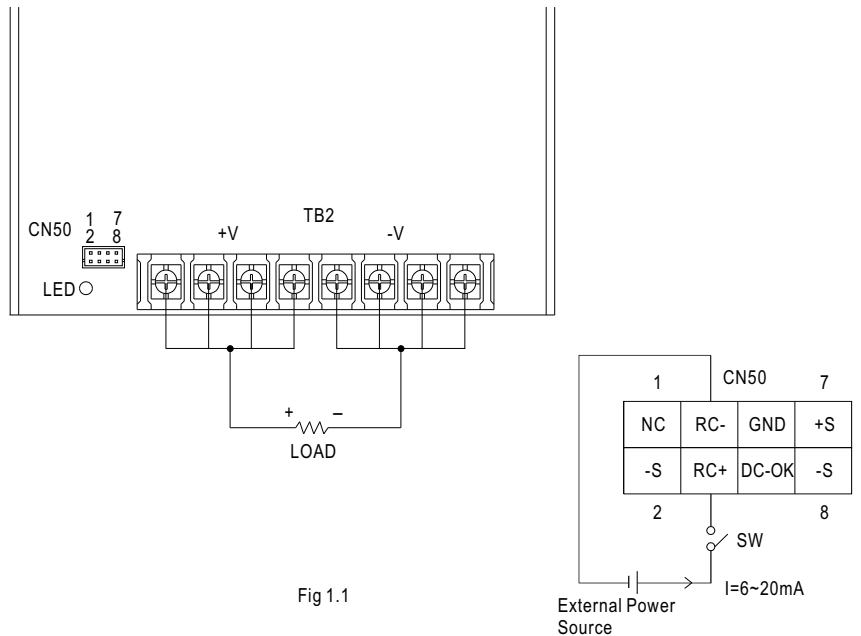


Fig 1.1

2. DC-OK Signal

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

| Between DC-OK(pin6) and GND(pin5) | Output Status |
|-----------------------------------|---------------|
| 3.3 ~ 5.6V                        | ON            |
| 0 ~ 1V                            | OFF           |

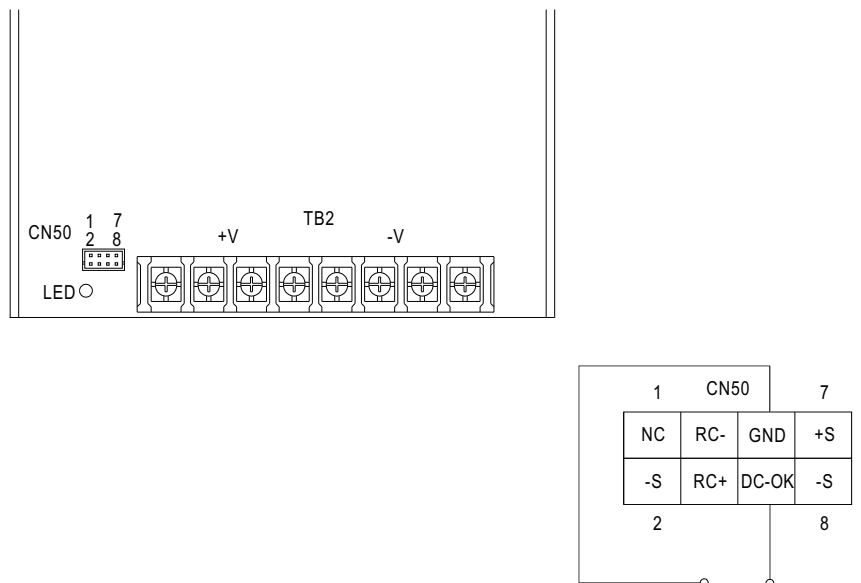


Fig 2.1

**3. Remote Sense**

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

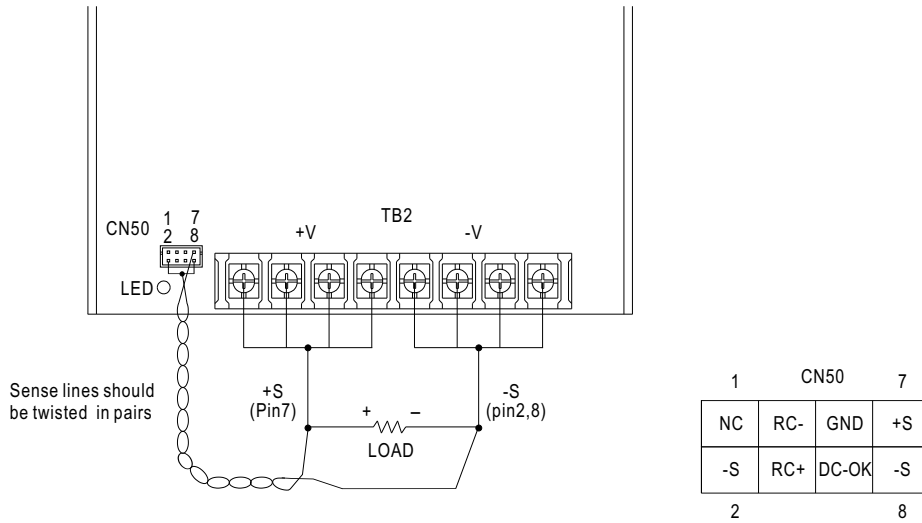


Fig 3.1

**4. Current Sharing with Remote Sensing (Optional for 24V & 48V)**

USP-500 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 2 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.

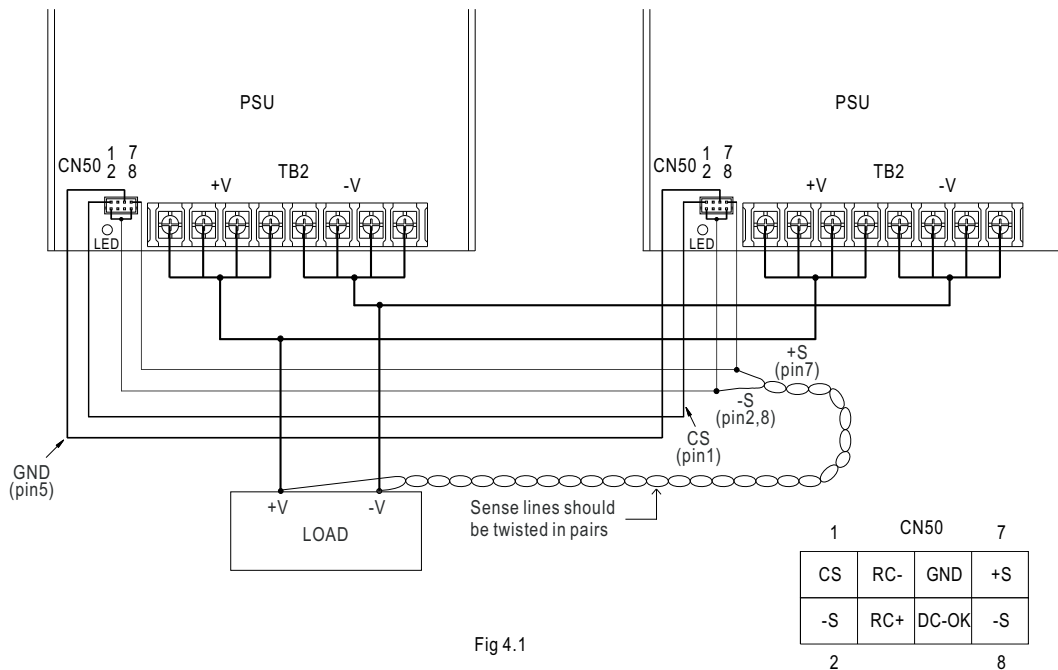


Fig 4.1

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.