



■ Features :

- Universal AC input / Full range
- Built-in active PFC function, PF>0.95
- High efficiency up to 89.5%
- Withstand 300VAC surge input for 5 seconds
- Protections: Short circuit / Overload / Over voltage / Over temperature
- Built-in constant current limiting circuit
- Medical safety approved (MOOP level)
- Built-in cooling Fan ON-OFF control
- Built-in DC OK signal
- Built-in remote ON-OFF control
- Stand by 5V@0.3A
- Built-in remote sense function
- No load power consumption<0.6W (Note.6)
- 5 years warranty

User's Manual



■ GTIN CODE

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



SPECIFICATION

| MODEL                 |                              | MSP-450-3.3                                                                                                                                                                    | MSP-450-5  | MSP-450-7.5 | MSP-450-12   | MSP-450-15   | MSP-450-24   | MSP-450-36   | MSP-450-48   |
|-----------------------|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------|--------------|--------------|--------------|--------------|--------------|
| OUTPUT                | DC VOLTAGE                   | 3.3V                                                                                                                                                                           | 5V         | 7.5V        | 12V          | 15V          | 24V          | 36V          | 48V          |
|                       | RATED CURRENT                | 90A                                                                                                                                                                            | 90A        | 60A         | 37.5A        | 30A          | 18.8A        | 12.5A        | 9.5A         |
|                       | CURRENT RANGE                | 0 ~ 90A                                                                                                                                                                        | 0 ~ 90A    | 0 ~ 60A     | 0 ~ 37.5A    | 0 ~ 30A      | 0 ~ 18.8A    | 0 ~ 12.5A    | 0 ~ 9.5A     |
|                       | RATED POWER                  | 297W                                                                                                                                                                           | 450W       | 450W        | 450W         | 450W         | 451.2W       | 450W         | 456W         |
|                       | RIPPLE & NOISE (max.) Note.2 | 80mVp-p                                                                                                                                                                        | 80mVp-p    | 100mVp-p    | 120mVp-p     | 150mVp-p     | 150mVp-p     | 240mVp-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, 100ms/230VAC      2500ms, 100ms/115VAC at full load                                                                                                                    |            |             |              |              |              |              |              |
| INPUT                 | HOLD UP TIME (Typ.)          | 16ms/230VAC      16ms/115VAC at full load                                                                                                                                      |            |             |              |              |              |              |              |
|                       | VOLTAGE RANGE Note.4         | 85 ~ 264VAC      120 ~ 370VDC                                                                                                                                                  |            |             |              |              |              |              |              |
|                       | FREQUENCY RANGE              | 47 ~ 63Hz                                                                                                                                                                      |            |             |              |              |              |              |              |
|                       | POWER FACTOR (Typ.)          | PF>0.95/230VAC      PF>0.99/115VAC at full load                                                                                                                                |            |             |              |              |              |              |              |
|                       | EFFICIENCY (Typ.)            | 80%                                                                                                                                                                            | 83%        | 86.5%       | 88%          | 89%          | 88%          | 89%          | 89.5%        |
|                       | AC CURRENT (Typ.)            | 5A/115VAC      2.4A/230VAC                                                                                                                                                     |            |             |              |              |              |              |              |
|                       | INRUSH CURRENT (Typ.)        | 35A/115VAC      70A/230VAC                                                                                                                                                     |            |             |              |              |              |              |              |
| PROTECTION            | LEAKAGE CURRENT              | Earth leakage current < 300 $\mu$ A/264VAC , Touch leakage current < 100 $\mu$ A/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 |
|                       | OVER TEMPERATURE             | Shut down o/p voltage, recovers automatically after temperature goes down                                                                                                      |            |             |              |              |              |              |              |
| FUNCTION              | 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                                                                                                          |            |             |              |              |              |              |              |
|                       | FAN CONTROL (Typ.)           | Load 20 ± 10% or RTH2 ≥ 50°C Fan on                                                                                                                                            |            |             |              |              |              |              |              |
| ENVIRONMENT           | 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)                                                                                                                                                           |            |             |              |              |              |              |              |
|                       | VIBRATION                    | 10 ~ 500Hz, 5G 10min./1cycle, 60min. each along X, Y, Z axes                                                                                                                   |            |             |              |              |              |              |              |
| SAFETY & EMC (Note 8) | SAFETY STANDARDS             | IEC 60601-1:2005+A1+A2, ANSI/AAMI ES60601-1:2005+A2, CAN/CSA C22.2 No. 60601-1:2014+A2<br>EAC TP TC 004 approved;Design refer to BS EN/EN60335-1, BS EN/EN 62368-1(by request) |            |             |              |              |              |              |              |
|                       | ISOLATION LEVEL              | Primary-Secondary: 2xMOOP, Primary-Earth: 1xMOOP, Secondary-Earth: 1xMOOP                                                                                                      |            |             |              |              |              |              |              |
|                       | 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 BS EN/EN55011 (CISPR11) Class B, BS EN/EN61000-3-2,-3, EAC TP TC 020                                                                                             |            |             |              |              |              |              |              |
|                       | EMC IMMUNITY                 | Compliance to BS EN/EN61000-4-2,3,4,5,6,8,11, BS EN/EN60601-1-2, EAC TP TC 020                                                                                                 |            |             |              |              |              |              |              |
| OTHERS                | MTBF                         | 159.3K hrs min.      MIL-HDBK-217F (25°C)                                                                                                                                      |            |             |              |              |              |              |              |
|                       | DIMENSION                    | 218*105*41mm (L*W*H)                                                                                                                                                           |            |             |              |              |              |              |              |
|                       | PACKING                      | 1.19Kg; 12pcs/15.3Kg/0.82CUFT                                                                                                                                                  |            |             |              |              |              |              |              |

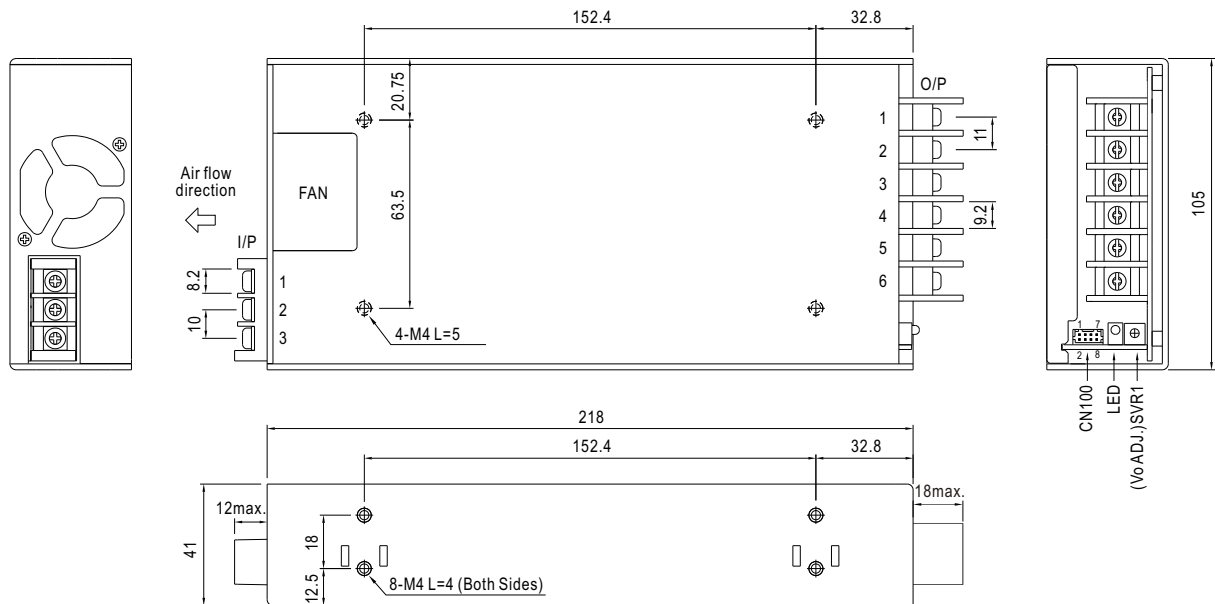
|      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
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| NOTE | <div>1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature.</div> <div>2. Ripple &amp; noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1 <math>\mu</math> F &amp; 47 <math>\mu</math> F parallel capacitor.</div> <div>3. Tolerance : includes set up tolerance, line regulation and load regulation.</div> <div>4. Derating may be needed under low input voltages. Please check the derating curve for more details.</div> <div>5. 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.</div> <div>6. No load power consumption&lt;0.5W when RC- &amp; RC+ (CN100 pin1,2) 0 ~ 0.8V or short.</div> <div>7. 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.</div> <div>8. 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."<br/>(as available on <a href="https://www.meanwell.com/Upload/PDF/EMI_statement_en.pdf">https://www.meanwell.com/Upload/PDF/EMI_statement_en.pdf</a> )</div> <div>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).</div> <div>※ Product Liability Disclaimer : For detailed information, please refer to <a href="https://www.meanwell.com/serviceDisclaimer.aspx">https://www.meanwell.com/serviceDisclaimer.aspx</a></div> |
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## 450W Single Output Medical Type

# MSP-450 series

## ■ Mechanical Specification



### AC Input Terminal Pin No. Assignment

| Pin No. | Assignment                     |
|---------|--------------------------------|
| 1       | AC/L                           |
| 2       | AC/N                           |
| 3       | FG $\underline{\underline{=}}$ |

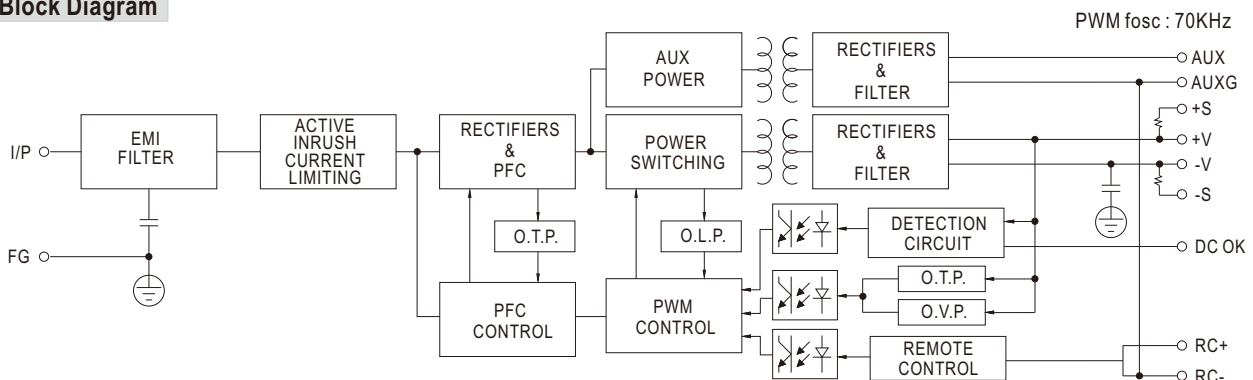
### DC Output Terminal Pin No. Assignment

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

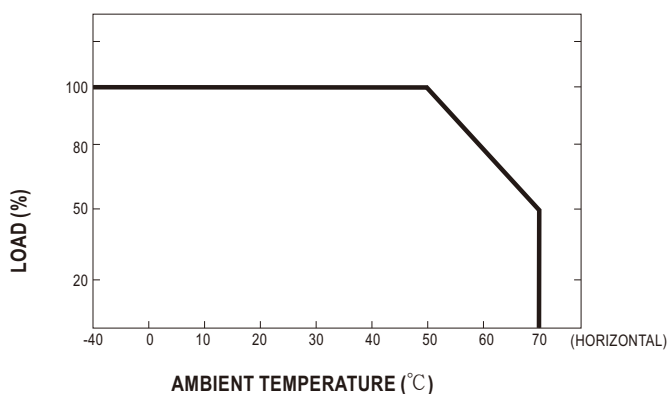
Connector Pin No. Assignment(CN100) : HRS DF11-8DP-2DS or equivalent

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

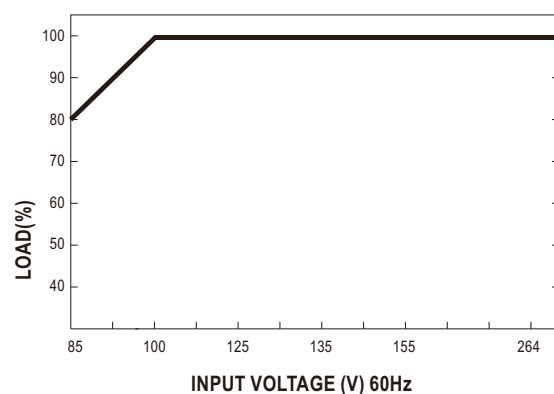
### ■ Block Diagram



### Derating Curve



### ■ Output Derating VS Input Voltage



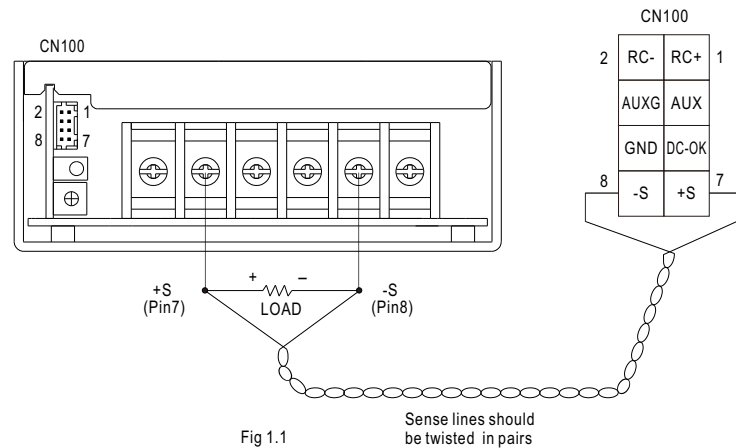
## Function Description of CN100

| Pin No. | Function | Description                                                                                                                                                                                                           |
|---------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1       | RC+      | Turns the output on and off by electrical or dry contact between pin 2 (RC-), Short: Power OFF, Open: Power ON.                                                                                                       |
| 2       | RC-      | Remote control ground.                                                                                                                                                                                                |
| 3       | AUX      | Auxiliary voltage output, 4.75~5.25V, referenced to pin 4(AUXG). The maximum load current is 0.3A. This output is not controlled by the "remote ON/OFF control".                                                      |
| 4       | AUXG     | Auxiliary voltage output ground. The signal return is isolated from the output terminals (+V & -V).                                                                                                                   |
| 5       | DC-OK    | DC-OK Signal is a TTL level signal, referenced to pin6(DC-OK GND). High when PSU turns on.                                                                                                                            |
| 6       | GND      | This pin connects to the negative terminal(-V). Return for DC-OK signal output.                                                                                                                                       |
| 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. |
| 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. |

## Function Manual

### 1.Remote Sense

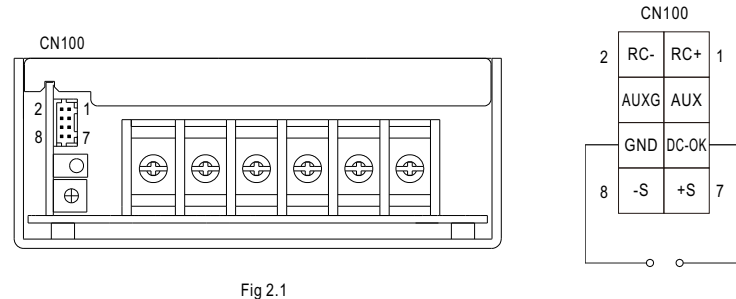
The remote sensing compensates voltage drop on the load wiring up to 0.5V.



### 2.DC-OK Signal

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

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



### 3.Remote Control

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

| Between RC+(pin1) and RC-(pin2) | Output Status |
|---------------------------------|---------------|
| SW ON (Short)                   | OFF           |
| SW OFF (Open)                   | ON            |

