

### ■ Features

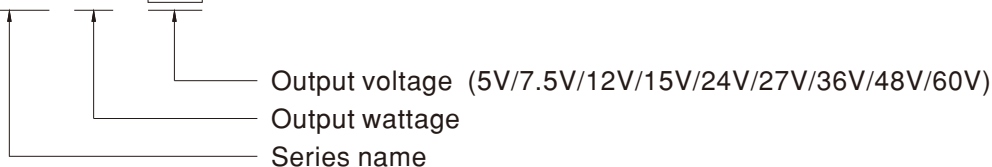
- 85~305Vac input with PFC(277Vac available)
- No load power consumption <0.3W~0.5W by R.C.
- Global certificates in multi-fields (ITE 62368-1, Medical 60601-1, Household 60335-1, Industrial 61558-1/2-16/61010-1, Energy converter 62477-1)
- 200% peak power capability(12~60V models)
- High efficiency up to 94.5%
- -40~85°C wide range operation temperature(> +60°C derating)
- Extremely low leakage current<350µA, 2 x MOPP, suitable for BF medical applications
- Built-in constant current limiting circuit
- Protections: Short circuit / Overload / Over voltage / Over temperature
- Fanless design for noise sensitive applications
- Built-in remote ON/OFF control
- Over voltage category III (OVC III)
- Operating altitude up to 5000 meters
- Conformal coating
- 5 years warranty

### ■ Description

The NSP-200 series is a 200W AC/DC power supply with PFC function, designed for high reliability and suitable for multiple industries. Key features include: compact size (159\*97\*30 mm) for better space utilization in system installations, ultra-wide input range of 85~305Vac for global compatibility, up to 94.5% efficiency and low standby power consumption (<0.3W~0.5W by models) for energy-saving and carbon reduction, constant current design with 200% peak power capability, fanless design, wide operating temperature range from -40 to +85°C (+60°C at full load), compliance with OVCIII, built-in Remote Control /Remote Sense/DC OK signal, internal PCB coating, complete protections, certifications for multiple safety standards including 62368-1, 60601-1, 61558-1, 60335-1, 62477-1, and 61010-1, as well as 2 X MOPP compliance and extremely low leakage current (<350µA). It is suitable for BF-rated medical equipment and comes with a 5-years warranty, making it a highly cost-effective solution for industrial power supply needs.

### ■ Model Encoding

NSP - 200 - 24



### ■ Applications

- Industrial automation machinery/control system
- Security system
- Mechanical and electrical equipment
- Electronic instruments, equipments or apparatus
- Network equipment
- Telecom devices
- Power sourcing equipment of PoE
- Home automation
- Medical devices

### ■ GTIN CODE

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



# 200W AC/DC High Reliable Multi-Industries Enclosed Type Power Supply **NSP-200** series

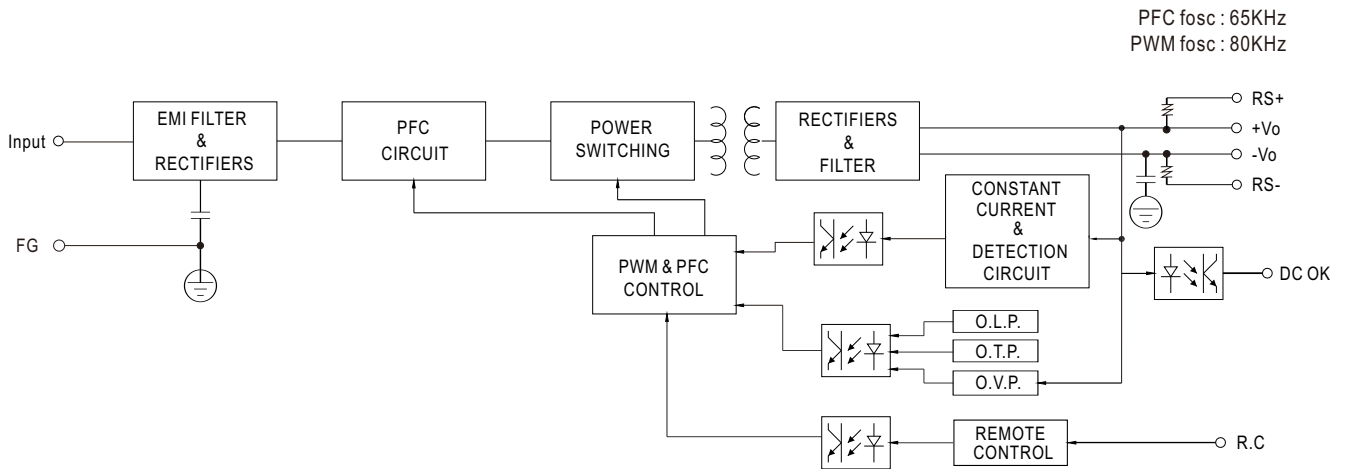
| SPECIFICATION                   |   | NSP-200-5  | NSP-200-7.5 | NSP-200-12                    | NSP-200-15 | NSP-200-24          | NSP-200-27 | NSP-200-36 | NSP-200-48 | NSP-200-60 |
|---------------------------------|---|--|-------------|-------------------------------|------------|---------------------|------------|------------|------------|------------|
| <b>OUTPUT</b>                   |   |  |             |                               |            |                     |            |            |            |            |
| DC VOLTAGE                      |   | 5V   | 7.5V        | 12V                           | 15V        | 24V                 | 27V        | 36V        | 48V        | 60V        |
| RATED CURRENT                   |   | 40A  | 26.8A       | 16.7A                         | 13.4A      | 8.4A                | 7.4A       | 5.6A       | 4.2A       | 3.36A      |
| CURRENT RANGE                   |   | 0 ~ 40A  | 0 ~ 26.8A   | 0 ~ 16.7A                     | 0 ~ 13.4A  | 0 ~ 8.4A            | 0 ~ 7.4A   | 0 ~ 5.6A   | 0 ~ 4.2A   | 0 ~ 3.36A  |
| RATED POWER                     |   | 200W   | 201W        | 200.4W                        | 201W       | 201.6W              | 199.8W     | 201.6W     | 201.6W     | 201.6W     |
| PEAK                            | CURRENT(5 sec.)   | N/A  | N/A         | 33.4A                         | 26.7A      | 16.7A               | 14.8A      | 11.2A      | 8.4A       | 6.7A       |
|                                 | POWER(5 sec.)   | N/A  | N/A         | 400W                          | 400W       | 400W                | 400W       | 400W       | 400W       | 400W       |
| RIPPLE & NOISE (max.) Note.2    |   | 200mVp-p   | 200mVp-p    | 200mVp-p                      | 200mVp-p   | 240mVp-p            | 240mVp-p   | 240mVp-p   | 240mVp-p   | 300mVp-p   |
| VOLTAGE ADJ. RANGE              |   | 4.7 ~ 5.5V   | 6.8 ~ 9V    | 10.8 ~ 14V                    | 15 ~ 19V   | 21 ~ 26V            | 26 ~ 32V   | 32 ~ 43V   | 44 ~ 57V   | 54 ~ 72V   |
| VOLTAGE TOLERANCE Note.3        |   | ±2.0%  | ±2.0%       | ±2.0%                         | ±2.0%      | ±1.0%               | ±1.0%      | ±1.0%      | ±1.0%      | ±1.0%      |
| LINE REGULATION                 |   | ±0.5%  | ±0.5%       | ±0.5%                         | ±0.5%      | ±0.5%               | ±0.5%      | ±0.5%      | ±0.5%      | ±0.5%      |
| LOAD REGULATION                 |   | ±1.0%  | ±1.0%       | ±0.5%                         | ±0.5%      | ±0.5%               | ±0.5%      | ±0.5%      | ±0.5%      | ±0.5%      |
| SETUP, RISE TIME                |   | 1500ms, 80ms/115Vac  |             | 1000ms, 80ms/230Vac           |            | 1000ms, 80ms/277Vac |            |            |            |            |
| HOLD UP TIME (Typ.)             |   | 16ms at full load  |             |                               |            |                     |            |            |            |            |
| <b>INPUT</b>                    |   |  |             |                               |            |                     |            |            |            |            |
| VOLTAGE RANGE Note.4            |   | 85 ~ 305Vac 120 ~ 431Vdc   |             |                               |            |                     |            |            |            |            |
| NO LOAD POWER CONSUMPTION(Typ.) | Remote Power OFF  | 0.3W/115Vac  |             | 0.5W/230Vac                   |            | 0.5W/277Vac         |            |            |            |            |
|                                 | Remote Power ON   | 3W/115Vac  |             | 3W/230Vac                     |            | 3W/277Vac           |            |            |            |            |
| FREQUENCY RANGE                 |   | 47 ~ 63Hz  |             |                               |            |                     |            |            |            |            |
| POWER FACTOR (Typ.)             |   | PF>0.98/115Vac, PF>0.93/230Vac, PF>0.9/277Vac at full load   |             |                               |            |                     |            |            |            |            |
| EFFICIENCY (Typ.)               |   | 92%  | 92%         | 93.5%                         | 94%        | 94.5%               | 94.5%      | 94.5%      | 94%        | 94%        |
| AC CURRENT (Typ.)               |   | 2A/115Vac  | 1A/230Vac   | 0.8A/277Vac                   |            |                     |            |            |            |            |
| INRUSH CURRENT (Typ.)           |   | COLD START 23A/115Vac  |             | 40A/230Vac                    |            | 50A/277Vac          |            |            |            |            |
| LEAKAGE CURRENT                 |   | Earth leakage current <350µA(rms)@277Vac, touch current<100µA(rms) @ 277Vac  |             |                               |            |                     |            |            |            |            |
| <b>PROTECTION</b>               |   |  |             |                               |            |                     |            |            |            |            |
| SHORT CIRCUIT                   | 5V  | Hiccup mode; recovers automatically after fault condition is removed   |             |                               |            |                     |            |            |            |            |
|                                 | 7.5V ~ 60V  | Constant current limiting for more than 5 seconds (Vout<30%) and then shut down o/p voltage, AC re-power on to recover   |             |                               |            |                     |            |            |            |            |
| OVERLOAD                        | 5V  | 105%~170% rated Output power ; Hiccup mode; recovers automatically after fault condition is removed  |             |                               |            |                     |            |            |            |            |
|                                 | 7.5V  | 105%~150% rated output power; Constant current limiting for more than 5 seconds and then shut down o/p voltage, AC re-power on to recover  |             |                               |            |                     |            |            |            |            |
|                                 | 12V ~ 60V   | Normally works within 105 ~ 200% rated output power for more than 5 seconds and then constant current limiting without shutdown(Vout>30%), recovers automatically after fault condition is removed, or shut down o/p voltage when Vout<30%,AC re-power on to recover<br>>200% rated power, constant current limiting (Vout>30%)with auto-recovery after fault condition is removed, or shut down o/p voltage when Vout<30%,AC re-power on to recover |             |                               |            |                     |            |            |            |            |
| OVER VOLTAGE                    | 5.8 ~ 7.5V  | 9 ~ 13V  | 15 ~ 19V    | 20 ~ 25V                      | 28 ~ 36V   | 33~ 42V             | 44 ~ 54V   | 58~ 70V    | 73~ 86V    |            |
|                                 | Protection type : Shut down o/p voltage, re-power on to recover |  |             |                               |            |                     |            |            |            |            |
| OVER TEMPERATURE                |   | Shut down o/p voltage, re-power on to recover  |             |                               |            |                     |            |            |            |            |
| <b>FUNCTION</b>                 |   |  |             |                               |            |                     |            |            |            |            |
| REMOTE CONTROL                  |   | POWER ON: RC+~RC-  |             | 0~0.8Vdc or open              |            |                     |            |            |            |            |
|                                 |   | POWER OFF: RC+~RC-   |             | 3.3~10Vdc by external voltage |            |                     |            |            |            |            |
| REMOTE SENSE                    |   | Compensate voltage drop on the load wiring up to 0.3V. Please refer to the Function Manual   |             |                               |            |                     |            |            |            |            |
| DC OK SIGNAL                    |   | By phototransistor, contact rating(max.):15Vdc/10mA resistive load. Please refer to the Function Manual.   |             |                               |            |                     |            |            |            |            |
| <b>ENVIRONMENT</b>              |   |  |             |                               |            |                     |            |            |            |            |
| WORKING TEMP.                   |   | -40 ~ +85°C (Refer to "Derating Curve")  |             |                               |            |                     |            |            |            |            |
| WORKING HUMIDITY                |   | 20 ~ 90% RH non-condensing   |             |                               |            |                     |            |            |            |            |
| STORAGE TEMP., HUMIDITY         |   | -40 ~ +85°C, 10 ~ 95% RH non-condensing  |             |                               |            |                     |            |            |            |            |
| TEMP. COEFFICIENT               |   | ±0.05%/°C (0 ~ 60°C)   |             |                               |            |                     |            |            |            |            |
| VIBRATION                       |   | 10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes   |             |                               |            |                     |            |            |            |            |



# 200W AC/DC High Reliable Multi-Industries Enclosed Type Power Supply **NSP-200** series

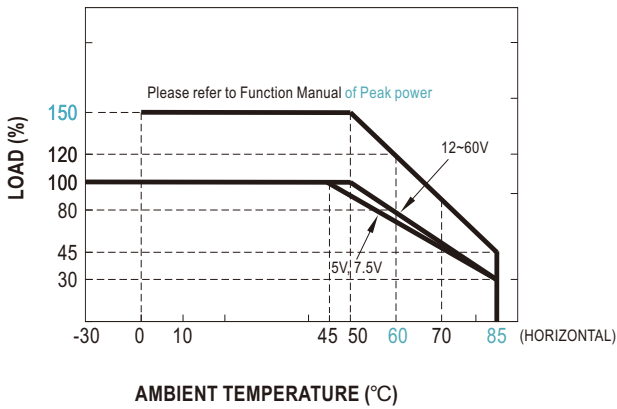
| SAFETY & EMC (Note.5&6&7)   |  |   |   |
|---|--|---|---|
| SAFETY STANDARDS  | CB   | IEC62368-1, IEC60335-1, IEC61558-1/-2-16, IEC61010-1/-2-201, IEC60601-1; IEC62477-1   |   |
|   | DEKRA  | BS EN/EN62368-1, BS EN/EN60335-1, BS EN/EN61558-1/-2-16, BS EN/EN61010-1/-2-201, BS EN/EN60601-1(3.2 Version);BS EN/EN62477-1 |   |
|   | UL   | UL62368-1, ANSI/AAMI ES60601-1(3.2 Version),UL61010-1/-2-201  |   |
|   | CCC  | GB4943.1  |   |
|   | BSMI   | CNS15598-1  |   |
|   | EAC  | TP TC 004   |   |
|   | SEMI F47   | approved;   |   |
|   | KC/BIS   | KC62368-1 and BIS IS 13252 (Part 1) certified, no stock by request, contact sales for inquiries                               |   |
| ISOLATION LEVEL(Note.8)   | Primary-Secondary: 2xMOPP, Primary-Earth: 1xMOPP, Secondary-Earth: 1xMOPP  |   |   |
| OVER VOLTAGE CATEGORY (Note.9)  | IEC/EN 61558-1/-2-16   | (OVC III, altitude up to 2000M)   |   |
|   | IEC/EN/UL 62368-1  | (OVC II, altitude up to 5000M)  |   |
|   | IEC/EN 60335-1   | (OVC II, altitude up to 5000M)  |   |
|   | IEC/EN/ANSI/AAMI ES60601-1   | (OVC II, altitude up to 4000M)  |   |
|   | IEC/EN/UL 61010-1/-2-201   | (OVC II, altitude up to 5000M)  |   |
|   | IEC/EN62477-1  | (OVC II, altitude up to 5000M)  |   |
| SAFETY EXTRA-LOW VOLTAGE(SELV)  | IEC/EN 61558-2-16 (SELV, 5 ~ 36V)  |   |   |
|   | IEC/EN 60335-1 (SELV, 5 ~ 36V)   |   |   |
|   | IEC/EN/UL 62368-1 (SELV/ES1, 5 ~ 36V)  |   |   |
| WITHSTAND VOLTAGE   | I/P-O/P:4.2KVac I/P-FG:2.1KVac O/P-FG:1.5KVac  |   |   |
| ISOLATION RESISTANCE  | I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25°C/ 70% RH  |   |   |
| EMC EMISSION  | <b>Parameter</b>   | <b>Standard</b>   | <b>Test Level / Note</b>  |
|   | Conducted  | BS EN/EN55032(CISPR32),CNS 15936, GB/T 9254.1,KS C 9832   | Class B   |
|   |  | BS EN/EN55014-1(CISPR14-1)  |   |
|   |  | BS EN/EN55011(CISPR11)  | Class B   |
|   | Radiated   | BS EN/EN55032(CISPR32),CNS 15936, GB/T 9254.1,KS C 9832   | Class B   |
|   |  | BS EN/EN55014-1(CISPR14-1)  |   |
|   |  | BS EN/EN55011(CISPR11)  | Class B   |
| Harmonic Current  | BS EN/EN61000-3-2(IEC61000-3-2), GB 17625.1  | Class A   |   |
| Voltage Flicker   | BS EN/EN61000-3-3(IEC61000-3-3)  | -----   |   |
| EMC IMMUNITY  | BS EN/EN55035(CISPR35),BS EN/EN61000-6-2(IEC61000-6-2),BS EN/EN60601-1-2(IEC60601-1-2), BS EN/EN55014-2(CISPR14-2),KS C 9835,SEMI F47 tested at 200Vac |   |   |
|   | <b>Parameter</b>   | <b>Standard</b>   | <b>Test Level / Note</b>  |
|   | ESD  | BS EN/EN61000-4-2   | Level 4, 15KV air ; Level 4, 8KV contact                                    |
|   | Radiated   | BS EN/EN61000-4-3   | Level 3, 10V/m(80MHz~2.7GHz)<br>Table 9, 9~28V/m(385MHz~5.78GHz)            |
|   | EFT / Burst  | BS EN/EN61000-4-4   | Level 3, 2KV  |
|   | Surge  | BS EN/EN61000-4-5   | Level 4, 2KV/Line-Line 4KV/Line-Earth                                       |
|   | Conducted  | BS EN/EN61000-4-6   | Level 3, 10V  |
|   | Magnetic Field   | BS EN/EN61000-4-8   | Level 4, 30A/m  |
|   | Voltage Dips and Interruptions   | BS EN/EN61000-4-11  | >95% dip 0.5 periods, 30% dip 25 periods,<br>>95% interruptions 250 periods |
|   | <b>OTHERS</b>  |   |   |
| MTBF  | 1775.2K hrs min. Telcordia SR-332 (Bellcore) ; 244.0K hrs min. MIL-HDBK-217F (25°C)  |   |   |
| DIMENSION (L*W*H)   | 159*97*30mm  |   |   |
| PACKING   | 0.5Kg;24pcs/12.9Kg/0.73CUFT  |   |   |
| <b>NOTE</b>   |  |   |   |
| <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. Derating may be need under low input voltages. Please refer to "STATIC CHARACTERISTIC" sections for details.</p> <p>5. The Regulatory Compliance Mark (RCM) is applied on a voluntary basis. The equipment meets the relevant IEC or AS/NZS standards, or AS/NZS 3820 where applicable. The use of the RCM mark complies with AS/NZS 4417.1.</p> <p>6. 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="https://www.meanwell.com/Upload/PDF/EMI_statement_en.pdf">https://www.meanwell.com/Upload/PDF/EMI_statement_en.pdf</a>)</p> <p>7. Some factory or model may not have the BIS logo, please contact your MEAN WELL sales for more information.</p> <p>8. MOPP is suitable for 100-240Vac input only</p> <p>9. The ambient temperature derating of 3.5°C / 1000m with fanless models and 5°C/1000m with fan models for operating altitude higher than 2000m(6500ft).</p> <p>※ Product Liability Disclaimer: For detailed information, please refer to <a href="https://www.meanwell.com/serviceDisclaimer.aspx">https://www.meanwell.com/serviceDisclaimer.aspx</a></p> |  |   |   |

■ Block Diagram



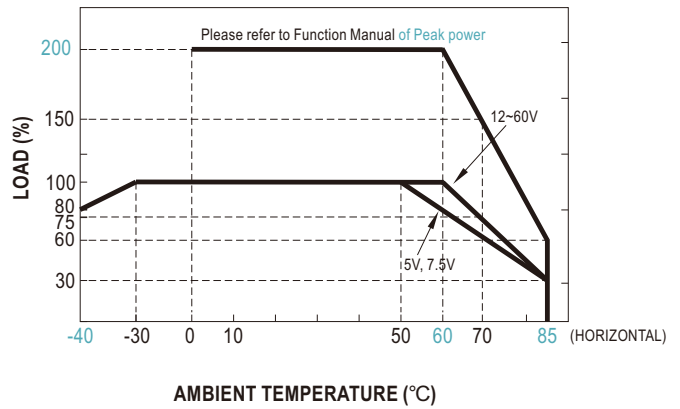
■ Derating Curve

Suitable for 100/110/115/120Vac System (85~135Vac)

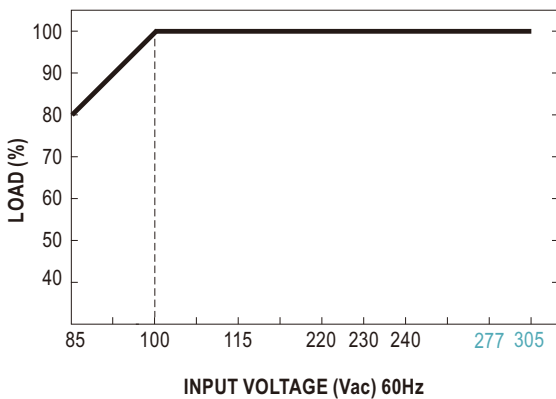


Note: Below 100Vac @-30°C there may be a restart situation within 3 seconds after power-on

Suitable for 220/230/240/277Vac System (180~305Vac)



■ Output Derating vs Input Voltage



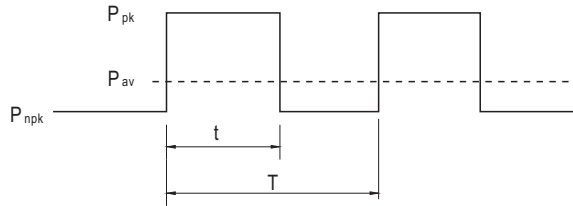
**Function Manual**

**1. Peak Power**

$$P_{av} = \frac{P_{pk} \times t + P_{npk} \times (T-t)}{T} \leq P_{rated}$$

$$Duty = \frac{t}{T} \times 100\% \leq 35\%$$

$$t \leq 5 \text{ sec}$$



$P_{av}$  : Average output power (W)

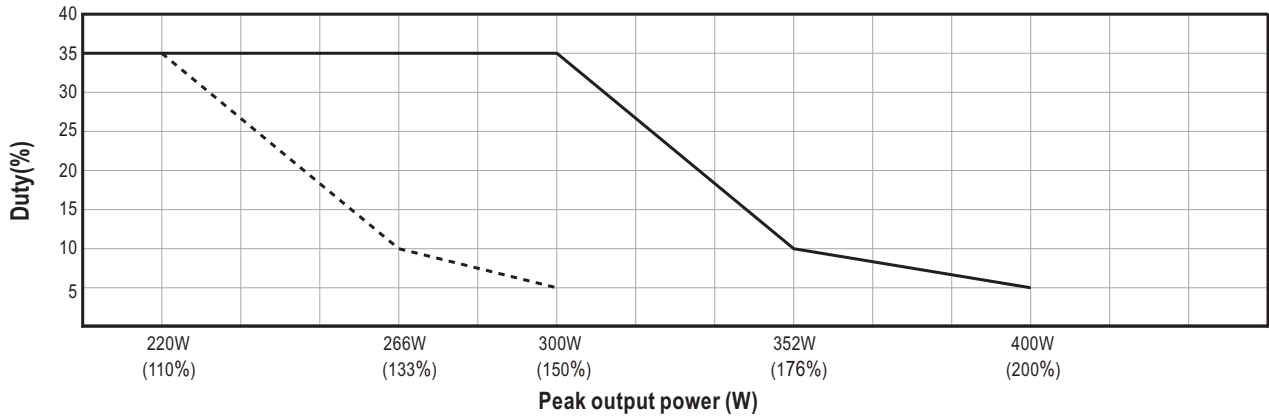
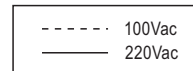
$P_{pk}$  : Peak output power (W)

$P_{npk}$  : Non-peak output power (W)

$P_{rated}$  : Rated output power (W)

$t$  : Peak power width (sec)

$T$  : Period (sec)



**For example (24V model) :**

$V_{in} = 200Vac$      $Duty\_max = 5\%$

$P_{av} = P_{rated} = 200W$

$P_{pk} = 400W$

$t \leq 5 \text{ sec}$

$$T \geq \frac{5 \text{ sec}}{5\%} \geq 100 \text{ sec}$$

$$P_{npk} \leq \frac{TP_{av} - tP_{pk}}{T-t}$$

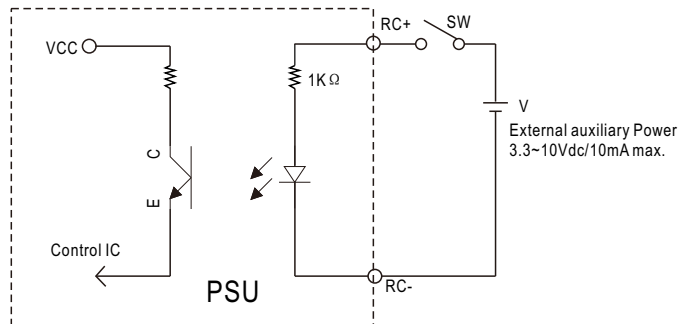
$$P_{npk} \leq 189W$$

Note: When the output voltage is adjusted to the upper limit, the peak power is 150% rated power

### 2.Remote Control

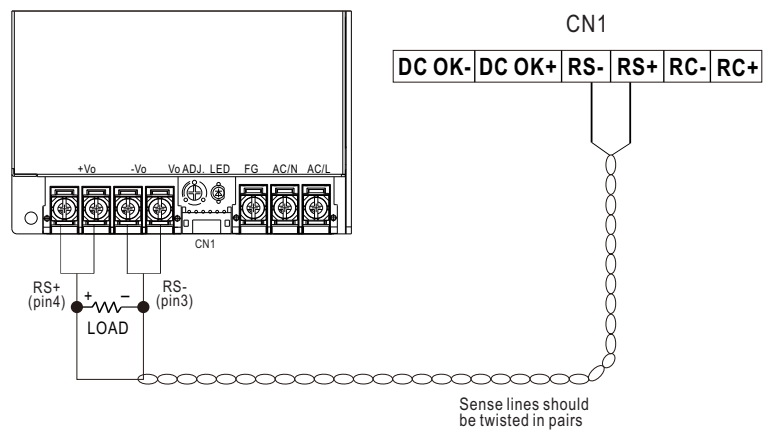
The PSU can be turned ON/OFF by using the "Remote Control" function with external switch and auxiliary power

|               |  |
|---------------|--|
| PSU Vo Status | Between RC-(pin5) and RC+(pin6) on CN1 |
| POWER ON      | Keep 0~0.8Vdc or open                  |
| POWER OFF     | Keep 3.3~10Vdc by external voltage     |



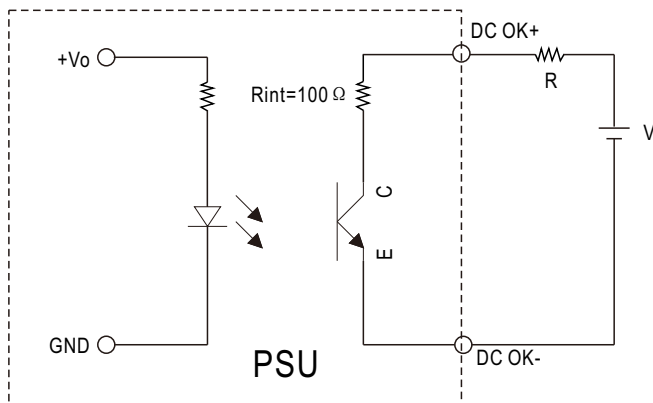
### 3.Remote Sense

The remote sensing compensates voltage drop on the load wiring up to 0.3Vdc



### 4.DC\_OK signal

※ DC\_OK is a collector shorted signal. It is used by an optocoupler in the power supply which indicates the output status of the power supply as exhibited below.



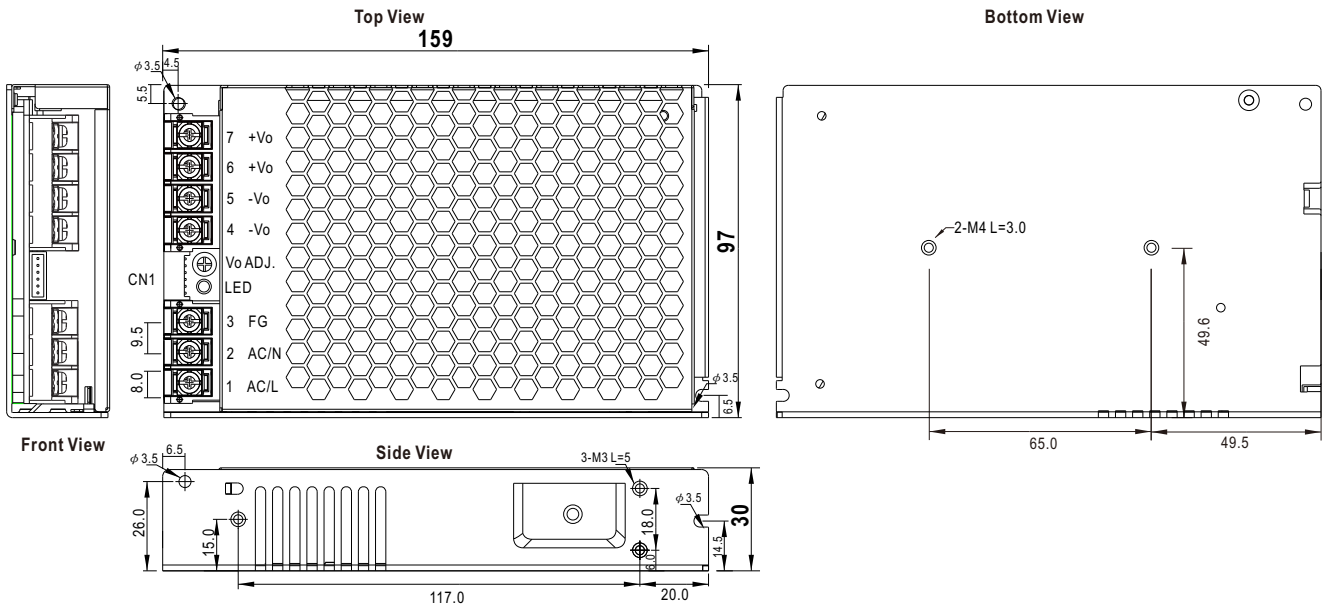
External voltage source(V) and resistor(R)

|               |                        |
|---------------|------------------------|
| PSU Vo Status | Photo transistor       |
| POWER ON      | Conduct(Low impedance) |
| POWER OFF     | Open(High impedance)   |

Optocoupler Rating(max.) 15Vdc/10mA resistive load

## ■ Mechanical Specification

Case No.311A Unit:mm Tolerance:±1



### ※ Input Terminal Pin No. Assignment

| Pin No. | Assignment            | Diagram | Screw thread | Mounting torque |
|---------|-----------------------|---------|--------------|-----------------|
| 1       | AC/L or DC input +Vin |         | M3.5         | 8-10Kgf.cm      |
| 2       | AC/N or DC input -Vin |         |              |                 |
| 3       | FG $\perp$            |         |              |                 |

### ※ DC Output Terminal Pin No. Assignment

| Pin No. | Assignment | Diagram | Screw thread | Mounting torque |
|---------|------------|---------|--------------|-----------------|
| 4,5     | -Vo        |         | M3.5         | 8-10Kgf.cm      |
| 6,7     | +Vo        |         |              |                 |

### Connector Pin No. Assignment (CN1): DJS-1125R-06 or equivalent

| Pin No. | Assignment | Mating Housing              | Terminal                   |
|---------|------------|-----------------------------|----------------------------|
| 1       | DC OK-     | JS-1124-06<br>or equivalent | JS-1124-T<br>or equivalent |
| 2       | DC OK+     |                             |                            |
| 3       | RS-        |                             |                            |
| 4       | RS+        |                             |                            |
| 5       | RC-        |                             |                            |
| 6       | RC+        |                             |                            |

## ■ Accessory List

| No. | Item  | Quantity       |
|-----|---|----------------|
| 1   | Control function interface(CN1) mating wire along with NSP-200 (standard accessory)                           | 1pcs/per model |
| 2   | Terminal cover<br>MW'S Order NO. : PEE4TBC-04, PEE4TBC-03<br>(By request accessory,should ordered separately) | 1pcs/per model |

## ■ Installation Manual

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

 [www.simpex.ch](http://www.simpex.ch)

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## Hauptsitz

**Simpex Electronic AG**  
Binzackerstrasse 33  
CH-8620 Wetzikon  
Telefon +41 44 931 10 10  
E-Mail [contact@simpex.ch](mailto:contact@simpex.ch)  
Internet [www.simpex.ch](http://www.simpex.ch)