# 1000W AC/DC High Reliable Multi-Industrial Enclosed Type Power Supply NSP-1000 series




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User's Manual

Click Me

IEC62368-1
IEC61558-1/-2-16
IEC61010-1/-2-201
IEC60601-1
IEC60335-1
IEC62477-1

BS EN/EN62368-1
BS EN/EN61558-1/-2-16
BS EN/EN61010-1/-2-201
BS EN/EN60601-1
BS EN/EN60335-1
BS EN/EN62477-1

UL62368-1
ANSI/AAMI ES60601-1

LISTED
UL61010-1

ECO | Automate | Industrial | Security | Network

Telecom | Household | Medical | 2xMOPP | BF rated

(Note.7) | GB4943.1 | CNS15598-1 | KC62368-1 (By request) | IS13252 (By request Note.9) | TPTC004

## ■ Features

- 85~305Vac input with PFC(277Vac available)
- Global certificates in multi-fields(ITE 62368-1, Medical 60601-1, Household 60335-1,Industrial 61558-1/2-16/61010-1/-2-201, Energy converter 62477-1 & SEMI47 approved)
- 200% peak power capability
- High efficiency up to 94%
- Output voltage 0~120% and output current 0~100% programmable
- Current sharing up to 4000W(3+1) for parallel use
- Built-in ORing MOS (by request, Order NO.:NSP-1000-xxOR/MODOR)
- Built-in CANBus; MODBus protocol (by request)
- -40~+85℃ wide range operation temperature(> +60℃ derating)
- Extremely low leakage current<350uA, 2 x MOPP, suitable for BF medical applications
- Built in constant current limiting circuit
- Protections: Short circuit / Overload / Over voltage / Over temperature
- Built-in remote ON/OFF control/Remote Sense/ DC OK signal
- Auxiliary 5V and 12V
- Over voltage category Ⅲ (OVC Ⅲ)
- Operating altitude up to 5000 meters
- Built-in intelligent fan speed control, low noise <24dB
- Conformal coating
- 5 years warranty

## ■ Applications

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

## ■ GTIN CODE

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

## ■ Description

The NSP-1000 series is a 1000W AC/DC power supply with PFC function, designed for high reliability and suitable for multiple industries. Key features include: compact size (230*127*41 mm) for better space utilization in system installations, ultra-wide input range of 85~305Vac for global compatibility, up to 94% efficiency for energy-saving and carbon reduction, programm-able output voltage (0~120%) and current (0~100%), constant current design with 200% peak power capability, parallel output capacity up to 4000W, 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/auxiliary power, 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 - 1000 - 48 CAN**

- CAN — Communication protocol option
- 48 — Output voltage (12V/15V/24V/27V/36V/48V/60V)
- 1000 — Output wattage
- NSP — Series name

| Type | Communication Protocol | Note |
|---|---|---|
| Blank | CANBus protocol | In Stock |
| MOD | MODBus protocol | By request |

MEAN WELL

# 1000W AC/DC High Reliable Multi-Industrial Enclosed Type Power Supply **NSP-1000 series**

| SPECIFICATION | NSP-1000-12□ | NSP-1000-15□ | NSP-1000-24□ | NSP-1000-27□ | NSP-1000-36□ | NSP-1000-48□ | NSP-1000-60□ |
|---|---|---|---|---|---|---|---|
| | □ =Blank (standard model in stock), MOD (By request model) | | | | | | |
| **OUTPUT** | | | | | | | |
| DC VOLTAGE | 12V | 15V | 24V | 27V | 36V | 48V | 60V |
| CURRENT | 83.4A | 66.7A | 41.7A | 37A | 27.8A | 21A | 16.8A |
| CURRENT RANGE | 0 ~ 83.4A | 0 ~ 66.7A | 0 ~ 41.7A | 0 ~ 37A | 0 ~ 27.8A | 0 ~ 21A | 0 ~ 16.8A |
| RATED POWER | 1000.8W | 1000.5W | 1000.8W | 999W | 1000.8W | 1008W | 1008W |
| PEAK CURRENT(5 sec.) | 166.7A | 133.4A | 83.4A | 64A | 55.6A | 41.7A | 33.4A |
| PEAK POWER(5 sec.) | 2000W | 2000W | 2000W | 2000W | 2000W | 2000W | 2000W |
| RIPPLE & NOISE (max.) Note.3 | 150mVp-p | 150mVp-p | 200mVp-p | 200mVp-p | 300mVp-p | 300mVp-p | 450mVp-p |
| VOLTAGE ADJ. RANGE | 10.8 ~ 14.4V | 13.5 ~ 19V | 21.6 ~ 28.8V | 24.3 ~ 32.4V | 32.4 ~ 43.2V | 43.2 ~ 55V | 54 ~ 72V |
| VOLTAGE TOLERANCE Note.4 | ±1.0% | | | | | | |
| LINE REGULATION | ±0.5% | | | | | | |
| LOAD REGULATION | ±0.5% | | | | | | |
| SETUP, RISE TIME Note.5 | 2500ms, 80ms/115Vac 1500ms, 80ms/230Vac 1500ms, 80ms/277Vac | | | | | | |
| HOLD UP TIME (Typ.) | 12ms @ 70% load, 8ms @full load | | | | | | |
| **INPUT** | | | | | | | |
| VOLTAGE RANGE | 85 ~ 305Vac 120 ~ 431Vdc | | | | | | |
| FREQUENCY RANGE | 47 ~ 63Hz | | | | | | |
| POWER FACTOR (Typ.) | 0.98/115Vac; 0.95/230Vac; 0.92/277Vac at full load | | | | | | |
| EFFICIENCY (Typ.) | 92% | 93% | 93.5% | 93% | 93.5% | 94% | 94% |
| AC CURRENT (Typ.) | 12A/115Vac 6A/230Vac 5A/277Vac | | | | | | |
| INRUSH CURRENT (Typ.) | COLD START 25A/115Vac 40A/230Vac 50A/277Vac | | | | | | |
| LEAKAGE CURRENT | Earth leakage current <350μA(rms)@277Vac touch current<100μA(rms) @ 277Vac | | | | | | |
| **PROTECTION** | | | | | | | |
| SHORT CIRCUIT — Peak Power Mode | Constant current limiting, unit will shut down after 5 Sec, AC repower on to recover | | | | | | |
| SHORT CIRCUIT — Current Limiting Mode | Constant current limiting, recovers automatically after abnormal condition is removed | | | | | | |
| OVERLOAD — Peak Power Mode | From 105% to 200% of rated output power, unit will shut down after 5 seconds of continuous operation. AC repower on to recover. | | | | | | |
| | At >200% of rated output power, constant current limiting is activated.Unit will shut down after 5 seconds of continuous operation. AC repower on to recover | | | | | | |
| OVERLOAD — Current Limiting Mode | Constant current limiting, recovers automatically after abnormal condition is removed | | | | | | |
| OVER VOLTAGE | 15 ~ 19V | 20 ~ 25V | 29 ~ 37V | 33~ 42V | 44 ~ 54V | 56~ 63V | 73 ~ 86V |
| | Protection type : Shut down and latch off output voltage, re-power on to recover | | | | | | |
| OVER TEMPERATURE | Protection type : Shut down output voltage, recovers automatically after temperature goes down | | | | | | |
| **FUNCTION** | | | | | | | |
| OUTPUT CURRENT PROGRAMMABLE(PC) | Adjustment of constant current level is allowable between 0 ~ 100% of rated current.<br>Please refer to the Function Manual. | | | | | | |
| OUTPUT VOLTAGE PROGRAMMABLE(PV) Note.6 | Adjustment of output voltage is allowable to 0 ~ 120% of nominal output voltage.<br>Please refer to the Function Manual. | | | | | | |
| PARALLEL | Up to 4000W or (3+1) units. Please refer to the Function Manual. | | | | | | |
| AUXILIARY POWER | 5Vaux @ 0.2A Tolerance ±15% , ripple 150mVp-p | | | | | | |
| | 12Vaux @ 0.8A Tolerance ±15% , ripple 450mVp-p | | | | | | |
| REMOTE CONTROL | By electrical signal or dry contact Power ON: RC short Power OFF: RC open. | | | | | | |
| REMOTE SENSE | Compensate voltage drop on the load wiring up to 0.5Vdc | | | | | | |
| DC OK SIGNAL | Contact rating(max.):5Vdc/10mA resistive load | | | | | | |
| CANBus or MODBus INTERFACE(By request) | Communication provides functions such as control, setting and monitoring | | | | | | |
| FAN NOISE (Typ.) Note.7 | Built-in intelligent fan speed control detect by PSU'S internal temperature | | | | | | |
| FAN NOISE (Typ.) 10% load with Ta=25℃ | 18dB | | | | | | |
| FAN NOISE (Typ.) 70% load with Ta=25℃ | 24dB | | | | | | |
| **ENVIRONMENT** | | | | | | | |
| WORKING TEMP. | -40 ~ +85℃ (Refer to "Derating Curve") | | | | | | |
| WORKING HUMIDITY | 20 ~ 90% RH non-condensing | | | | | | |
| STORAGE TEMP., HUMIDITY | -40 ~ +85℃, 10 ~ 95% RH non-condensing | | | | | | |
| TEMP. COEFFICIENT | ±0.03%/℃ (0 ~ 60℃) | | | | | | |
| VIBRATION | 10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes | | | | | | |

# 1000W AC/DC High Reliable Multi-Industrial Enclosed Type Power Supply **NSP-1000 series**

| | | |
|---|---|---|
| **SAFETY & EMC (Note 8~10)** | | |
| **SAFETY STANDARDS** | CB<br>DEKRA<br><br>UL<br>CCC<br>BSMI<br>EAC<br>SEMI F47<br>KC/BIS | IEC62368-1, IEC60335-1, IEC61558-1/-2-16, IEC61010-1/-2-201, IEC60601-1; IEC62477-1<br>BS EN/EN62368-1, BS EN/EN60335-1, BS EN/EN61558-1/-2-16, BS EN/EN61010-1/-2-201,<br>BS EN/EN60601-1(3.2 Version);BS EN/EN62477-1<br>UL62368-1, ANSI/AAMI ES60601-1(3.2 Version),UL61010-1/-2-201<br>GB4943.1<br>CNS15598-1<br>TP TC 004<br>approved;<br>KC 62368-1 and BIS IS 13252(Part 1) certified, No stock, contact sales by request |
| **ISOLATION RESISTANCE** Note.11 | Primary-Secondary: 2xMOPP, Primary-Earth: 1xMOPP, Secondary-Earth: 1xMOPP | |
| **OVER VOLTAGE CATEGORY** Note.12 | IEC/EN 61558-1/-2-16<br>IEC/EN/UL 62368-1<br>IEC/EN 60335-1<br>IEC/EN/ANSI/AAMI ES60601-1<br>IEC/EN/UL 61010-1/-2-201<br>IEC/EN 62477-1 | (OVC III, altitude up to 2000M)<br>(OVC II, altitude up to 5000M)<br>(OVC II, altitude up to 5000M)<br>(OVC II, altitude up to 4000M)<br>(OVC II, altitude up to 5000M)<br>(OVC II, altitude up to 5000M) |
| **SAFETY EXTRA-LOW VOLTAGE(SELV)** | IEC/EN 61558-2-16 (SELV, 12 ~ 60V)<br>IEC/EN 60335-1 (SELV, 12 ~ 36V)<br>IEC/EN/UL 62368-1 (SELV/ES1, 12 ~ 48V) | |
| **WITHSTAND VOLTAGE** | I/P-O/P:4KVac I/P-FG:2KVac O/P-FG:1.5KVac | |
| **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),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/ENEN55014-1(CISPR14-1) | |
| | BS EN/EN55011(CISPR11) | Class B |
| Harmonic Current | BS EN/EN61000-3-2(IEC61000-3-2) | 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

| Parameter | Standard | Test Level / Note |
|---|---|---|
| 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 |

| | |
|---|---|
| **OTHERS** | |
| **MTBF** | 910.8K hrs min. Telcordia SR-332 (Bellcore) ; 87.5K hrs min. MIL-HDBK-217F (25℃) |
| **DIMENSION (L*W*H)** | **230*127*41mm** |
| **PACKING** | 1.4Kg;9pcs/12.6Kg/0.85CUFT |

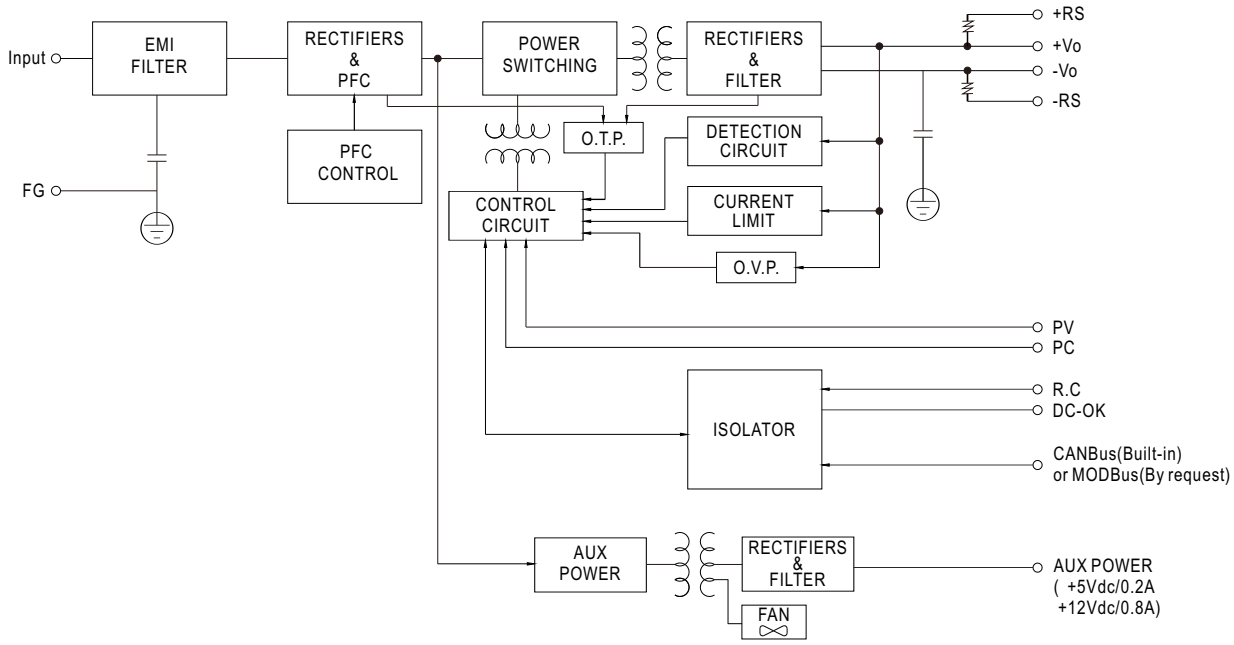
**NOTE**

1. All parameters NOT specially mentioned are measured at 230Vac input, rated load and 25℃ of ambient temperature.
2. Derating may be need under low input voltages. Please refer to "STATIC CHARACTERISTIC" sections for details.
3. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uF & 47uF parallel capacitor.
4. Tolerance: includes set up tolerance, line regulation and load regulation.
5. Length of set up time is measured at first cold start. Turning ON/OFF the driver may lead to increase of the set up time.
6. If use PV signal to adjust Vo, under certain operation conditions, ripple noise of Vo might go over rating defined in this specification.
7. FAN noise test set up according to ISO-7779.
8. 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.
9. Some factory or model may not have the BIS logo, please contact your MEAN WELL sales for more information.
10. 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 720mm*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 https://www.meanwell.com//Upload/PDF/EMI_statement_en.pdf)
11. MOPP is suitable for 100-240Vac input only
12. The ambient temperature derating of 3.5℃/1000m with fanless models and 5℃/1000m with fan models for operating altitude higher than 2000m(6500ft).

※ Product Liability Disclaimer ： For detailed information, please refer to https://www.meanwell.com/serviceDisclaimer.aspx

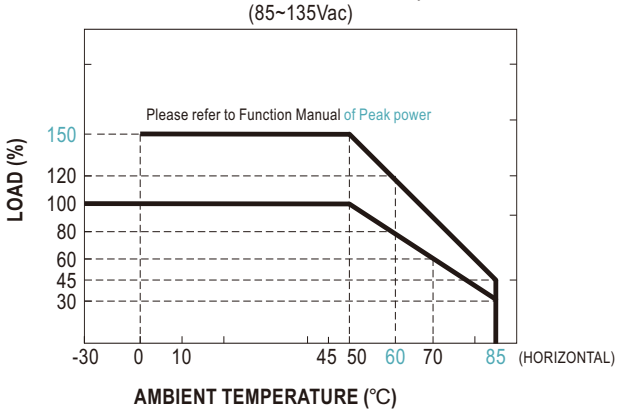
## ■ Block Diagram

PFC fosc : 65KHz
PWM fosc : 85KHz

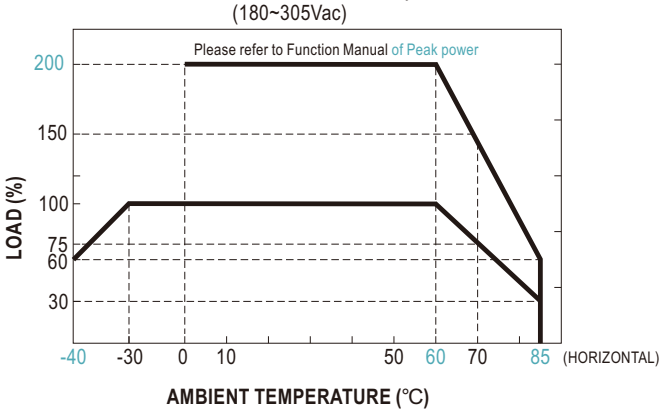



## ■ Derating Curve

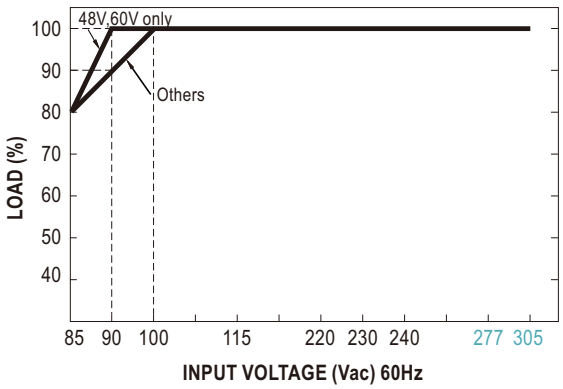
Suitable for 100/110/115/120Vac System
(85~135Vac)




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

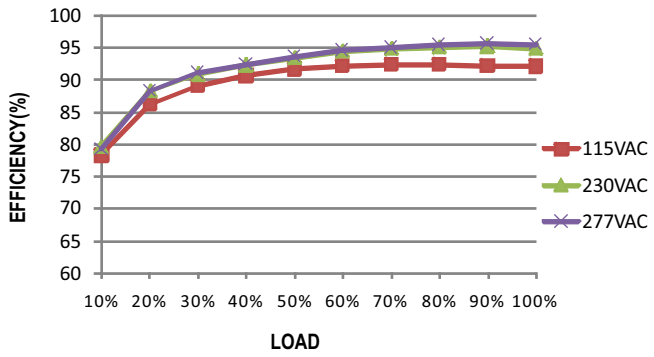



## ■ Output Derating vs Input Voltage




## ■ EFFICIENCY vs LOAD

※ 48V Model



## ■ Function Manual

### 1.Peak Power

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

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

$t \leqslant 5$ sec

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

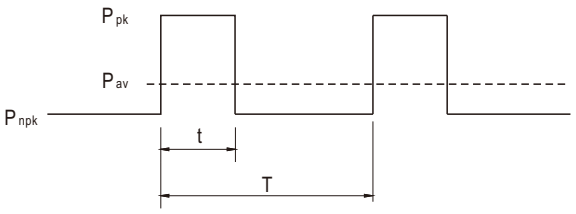
$P_{pk}$ : Peak output power (W)

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

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

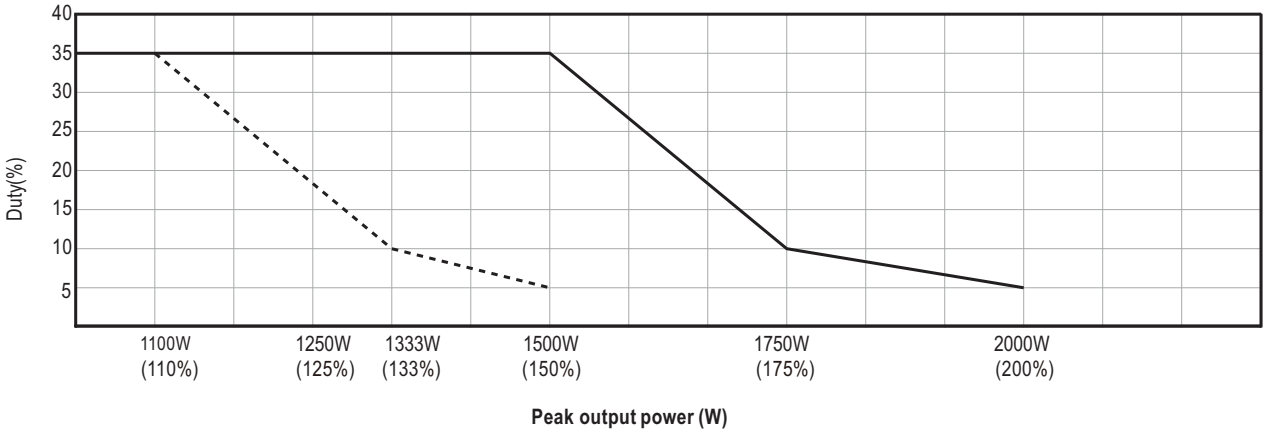
t : Peak power width (sec)

T : Period (sec)










**For example (24V model)**

$V_{in}$=220Vac, Duty_max=5%

$P_{av}=P_{rated}$=1000W

$P_{pk}$=2000W

t≤5sec

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

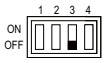
$P_{npk} \leq \frac{TP_{av}-tP_{pk}}{T-t} = 947.4W$

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

## 2.Output Voltage Programming(P.V)

(1)Default by potentiometer (SVR)

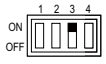
(a)Set DIP switch position-3 to OFF(refer to the illustration on the right).



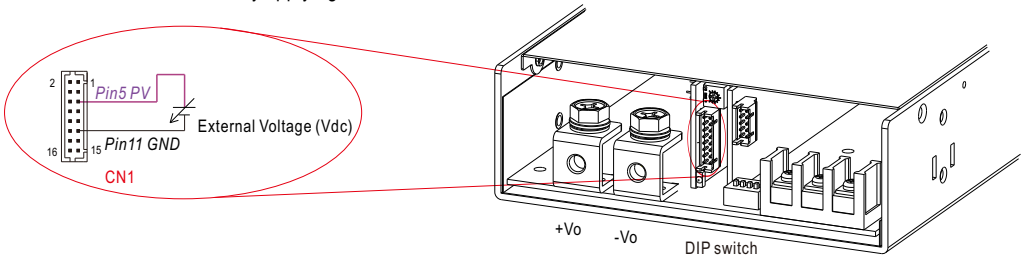

(b)Output voltage can be trimmed by SVR.

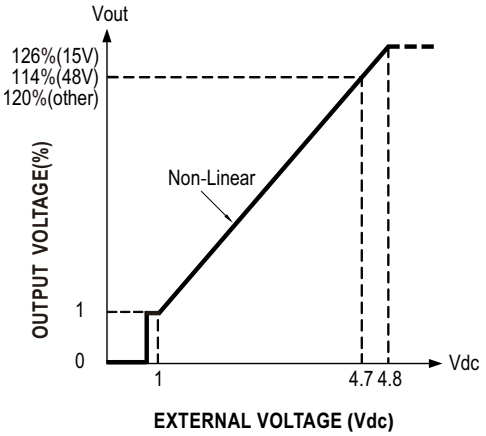
(2)By Output Voltage Programming

(a)Set DIP switch position-3 to ON(refer to the illustration on the right).




(b)The output voltage can be trimmed to 0~120% by applying EXTERNAL VOLTAGE between *PV* and *GND* on CN1.

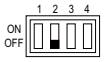



## 3.Output Current Programming(P.C)

(1)Default Overload Protection(OLP) value

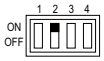
(a)Set DIP switch position-2 to OFF(refer to the illustration on the right).



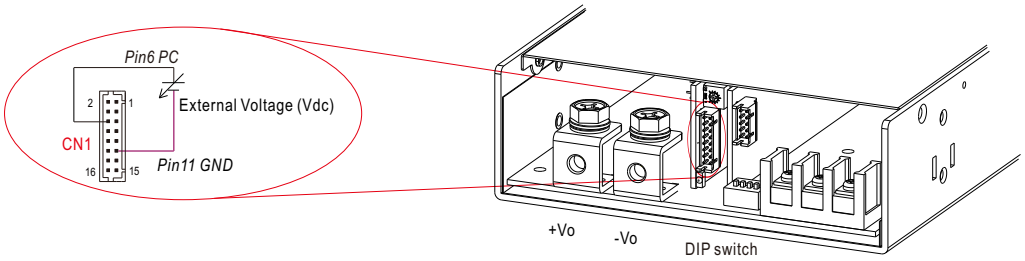

(b)Output current is set default value.

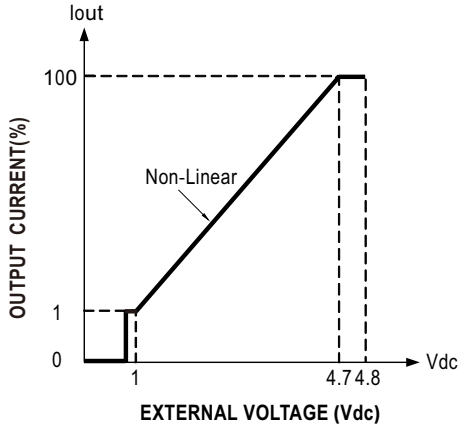
(2)By Constant Current Level Programming

(a)Set DIP switch position-2 to ON(refer to the illustration on the right).



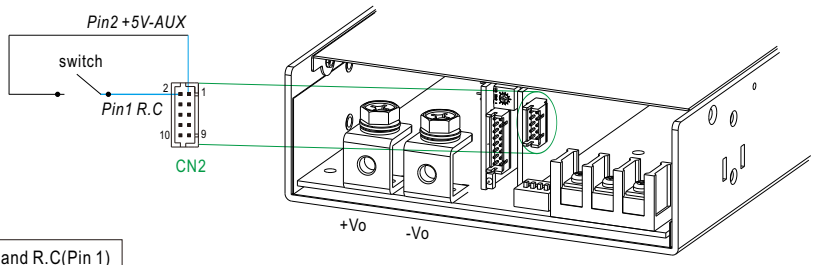

(b)The constant current level can be trimmed to 0~100% of the rated current by applying EXTERNAL VOLTAGE between *PC* and *GND* on CN1.



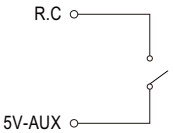
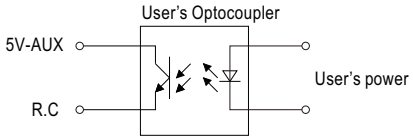
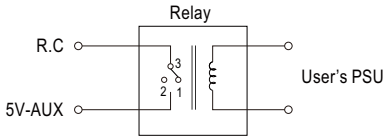



## 4.Remote Control

※ The power supply can be turned ON/OFF individually or along with other units by using the "Remote Control" function with external switch, potocoupler or relay.

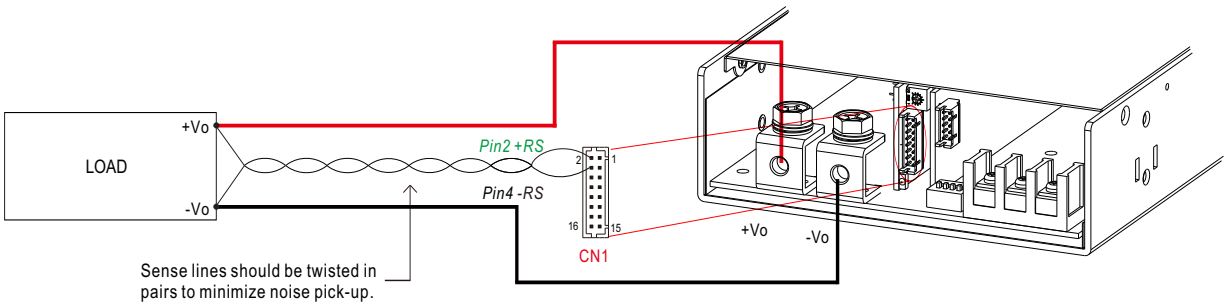



| PSU Vo Status | Between +5V-AUX(Pin 2) and R.C(Pin 1) |
|---|---|
| Power ON | Switch Short |
| Power OFF | Switch Open |

| | | |
|---|---|---|
|  |  |  |
| R.C. by external switch. | R.C. by user's optocoupler control module. | R.C. by user's Relay control module. |

## 5.Remote Sense

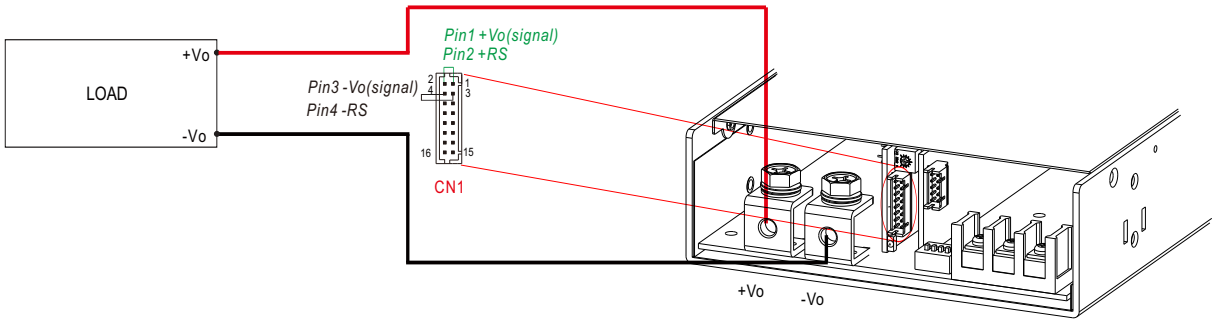
※ The Remote Sense compensates voltage drop on the load wiring up to 0.5Vdc




◎ The *+RS* signal should be connected to the positive terminal of the load whereas *-RS* signal to the negative terminal.

## 6.Local Sense

※ The +RS,-RS have to be connected to the +Vo(signal), -Vo(signal), respectively, as the following diagram, in order to get the correct output voltage if Remote Sense is not used.



## 7. Parallel Function

NSP-1000 has the built-in active current sharing function and can be connected in parallel, up to 4 units, to provide higher output power as exhibited below :

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

※ Difference of output voltages among parallel units should be less than 0.2Vdc.

※ 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

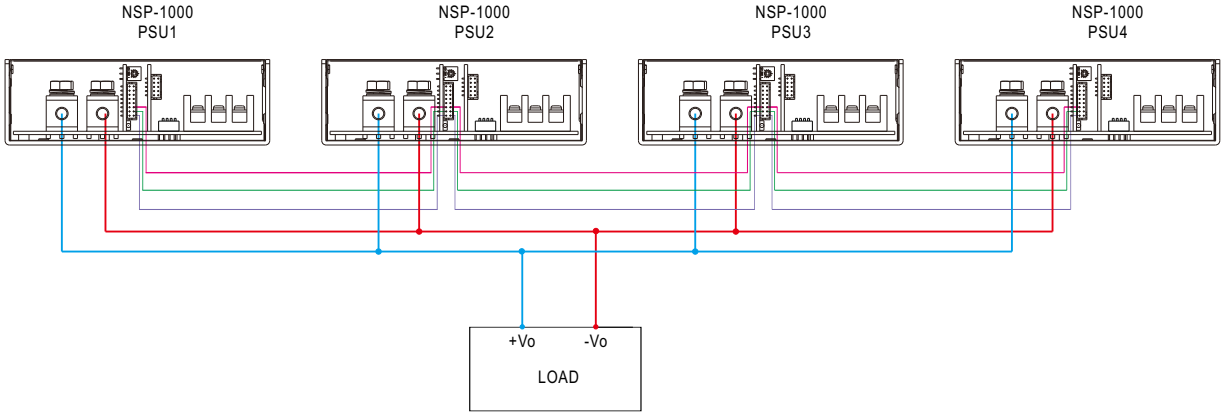
※ Under parallel operation, the minimum output load should be greater than 5% of total output load; otherwise, it is likely that only one unit operates whereas other units may enter standby mode or their LED status indicators may not turn on.

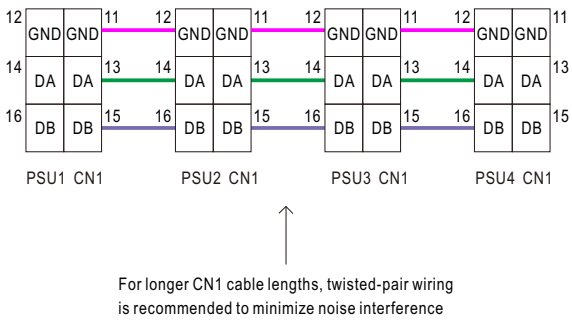
※ When the total output current is less than 5% of the total rated current, or say (5% of Rated current per unit)×(Number of unit) the current shared among units may not be fully balanced.

※ CN1/DIP SW1 Function pin connection

| Parallel | PSU1 | | PSU2 | | PSU3 | | PSU4 | |
|---|---|---|---|---|---|---|---|---|
| | CN1 | SW1 POS4 | CN1 | SW1 POS4 | CN1 | SW1 POS4 | CN1 | SW1 POS4 |
| 1 unit | X | ON | — | — | — | — | — | — |
| 2 unit | V | ON | V | ON | — | — | — | — |
| 3 unit | V | ON | V | — | V | ON | — | — |
| 4 unit | V | ON | V | — | V | — | V | ON |

◎V is CN1 connected to plug pin, X is CN1 not connected to plug pin.




For longer CN1 cable lengths, twisted-pair wiring is recommended to minimize noise interference

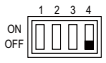
◎ DA,DB and GND are connected mutually in parallel.

◎ DA, DB signal and parallel control function

(1)Non-parallel operation

(a)Set DIP switch position-4 to OFF(refer to the illustration on the right).

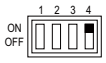
(b)Disconnect the bus termination resistor

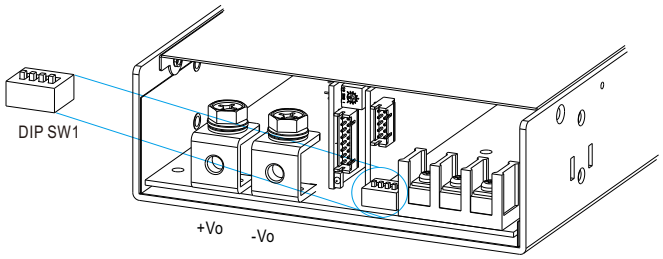



(2)Default parallel operation

(a)Set DIP switch position-4 to ON(refer to the illustration on the right).

(b)Terminal the bus with a 120Ω resistor

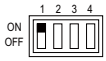



## 8. Overload Protection Mode

(1)Peak Power Mode

(a)Set DIP switch position-1 to ON(refer to the illustration on the right).

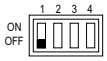



(b)Unit will shut down if the output exceeds 105% of the rated power for more than 5 Seconds. AC repower on to recover.

(c)Peak power capability: 150% of rated power for 5 seconds at 100Vac input & 200% of rated power for 5 seconds at 200Vac input.

(2)Current Limiting Mode

(a)Set DIP switch position-1 to OFF(refer to the illustration on the right).




(b)Constant current limiting

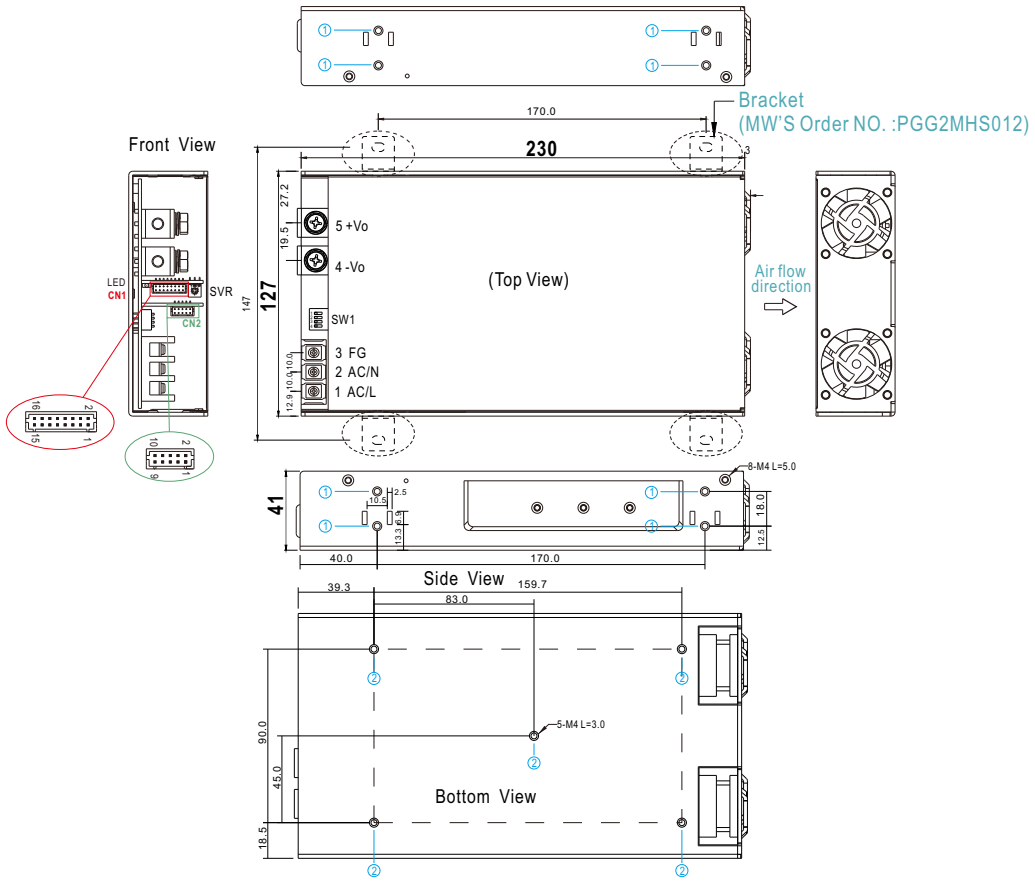
Note: When the PC function is applied, peak power mode is disabled. Overload protection automatically operates in constant-current limiting mode, and the maximum output current is limited to the PC current setting.

## 9. Support CANBus (built-in) or MODBus(By request) Communication

※ Communication provides function such as control, setting and monitoring, Parameters include output power, input voltage,etc.
For more details, please refer to: http://www.meanwell.com/manual.html

## ■ Mechanical Specification

Case No.313 Unit:mm Tolerance:±1




※AC Input Terminal Pin No. Assignment

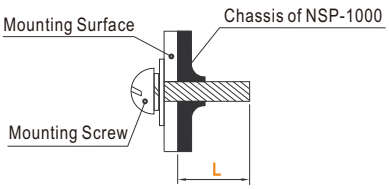
| Pin No. | Assignment | Diagram | Screw thread | Mounting torque |
|---|---|---|---|---|
| 1 | AC/L or DC input +Vin | | M3.5 | 8~10Kgf.cm |
| 2 | AC/N or DC input -Vin | | | |
| 3 | FG ⏚ | | | |

※DC Output Terminal Pin No. Assignment

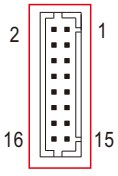
| Pin No. | Assignment | Diagram | Screw thread | Mounting torque |
|---|---|---|---|---|
| 4 | -Vo | | M5 | 10~12Kgf.cm |
| 5 | +Vo | | | |

※ Mounting Instruction

| Hole No. | Recommended Screw Size | MAX. Penetration Depth L | Mounting torque |
|---|---|---|---|
| ① | M4 | 5mm | 8~10Kgf-cm |
| ② | M4 | 3mm | 8~10Kgf-cm |




※Control Pin No. Assignment (CN1) : HRS DF11-16DP-2DS or equivalent

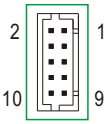



| Mating Housing | HRS DF11-16DS or equivalent |
|---|---|
| Terminal | HRS DF11-**SC or equivalent |

| Pin No. | Function | Description |
|---|---|---|
| 1 | +Vo (Signal) | Positive output voltage signal.<br>It is for local sense; it cannot be connected directly to the load. |
| 2 | +RS | Positive sensing for remote sense. |
| 3 | -Vo (Signal) | Negative output voltage signal.<br>It is for local sense and certain function reference; it cannot be connected directly to the load. |
| 4 | -RS | Negative sensing for remote sense. |
| 5 | PV | Connection for output voltage programming. (Note.1) |
| 6 | PC | Connection for constant current level programming. (Note.1) |
| 7,8,9,10 | A0,A1,A2,A3 | Interface address lines. (Note.2) |
| 11,12 | GND | These pins connect to the negative terminal for signals. |
| 13, 14 | DA | Differential digital signal for parallel control. |
| 15, 16 | DB | Differential digital signal for parallel control. |

Note1: Non-isolated signal, referenced to [GND].
Note2: Interface address setting, please refer to the user manual for more details.

※ Control Pin No. Assignment(CN2) : HRS DF11-10DP-2DS or equivalent

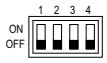



| Mating Housing | HRS DF11-10DS or equivalent |
|---|---|
| Terminal | HRS DF11-**SC or equivalent |

| Pin No. | Function | Description |
|---|---|---|
| 1 | R.C | The unit can turn the output ON/OFF by electrical signal or dry contact between R.C and +5V-AUX. (Note)<br>Short (4.5 ~ 5.5Vdc) : Power ON ; Open (-0.5 ~ 0.5Vdc) : Power OFF ; The maximum input voltage is 5.5Vdc. |
| 2 | +5V-AUX | Auxiliary voltage output, 4.25~5.75Vdc, referenced to GND-AUX (PIN4&PIN6).<br>The maximum load current is 0.2A. This output has the built-in "Oring diodes" and is not controlled by "R.C" |
| 3 | $\overline{\text{DC-OK}}$ | High (3.5 ~ 5.5Vdc) : When the Vout ≦77%±5%.<br>Low (-0.5 ~ 0.5Vdc) : When Vout ≧80%±5%.<br>The maximum sourcing current is 10mA and only for output. (Note) |
| 4,6 | GND-AUX | Auxiliary voltage output GND.<br>The signal return is isolated from the output terminals (+V & -V). |
| 5 | +12V-AUX | Auxiliary voltage output, 10.2~13.8Vdc, referenced to GND-AUX (PIN4&PIN6).<br>The maximum load current is 0.8A. This output has the built-in "Oring diodes" and is not controlled by "R.C". |
| 7 | D+ | For MODBus model: Data line used in MODBus interface. (Note) |
| | CANH | For CANBus model: Data line used in CANBus interface. (Note) |
| 8 | D- | For MODBus model: Data line used in MODBus interface. (Note) |
| | CANL | For CANBus model: Data line used in CANBus interface. (Note) |
| 9 | RTA | 120Ω temination resistor for CANBus/MODBus |
| 10 | RTB | 120Ω temination resistor for CANBus/MODBus |

Note: Isolated signal, referenced to GND-AUX.

※ DIP Switch Position Assignment(DIP-SW1): Please refer to the Function Manual.

| Pin No. | Assignment | Diagram |
|---|---|---|
| 1 | Overload protection mode configration |  DIP-SW POS1: OLP_MODE<br>DIP-SW POS2: PC<br>DIP-SW POS3: PV<br>DIP-SW POS4: RT |
| 2 | Output Current Programming (PC) | |
| 3 | Output Voltage Programming (PV) | |
| 4 | Termination resistor for current sharing bus | |

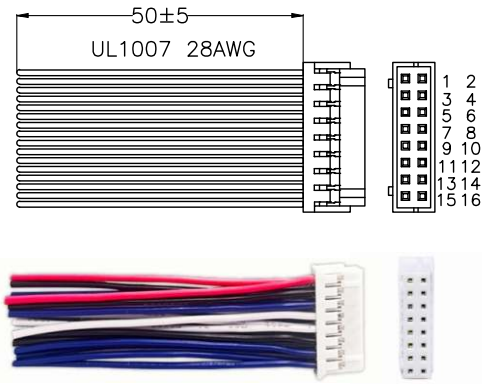
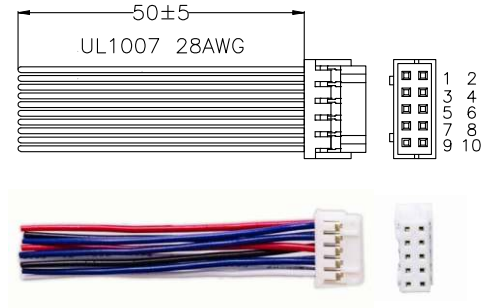
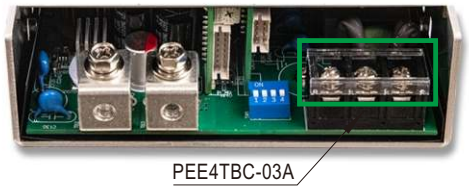


※ LED Status Indicators

| Description | Output of alarm |
|---|---|
| Normal operation | Green : Steadily lit |
| Remote off | Red : Steadily lit |
| Internal over-temperature | Orange : 1 Blink/Pause |
| Overload/Short | Red : 1 Blink/Pause |
| Over voltage | Red : 2 Blink/Pause |
| Over temperature | Red : 3 Blink/Pause |
| Fan fail | Red : 4 Blink/Pause |
| AC under voltage | Red : 5 Blink/Pause |
| Others (Note) | Red : 6 Blink/Pause |

Note: 1. Others include hardware fault etc.
2. In PC mode, both OLP and SCP operate in constant current limiting, with the indicator steadily lit green.

## ■ Accessory List

| No. | Item | | Quantity |
|---|---|---|---|
| 1 | Control function interface(CN1) mating wire along with NSP-1000 (standard accessory) |  | 1pcs/per model |
| 2 | Control function interface(CN2) mating wire along with NSP-1000 (standard accessory) |  | 1pcs/per model |
| 3 | Bracket<br>MW'S Order NO. :PGG2MHS012<br>(Optional accessories can be purchased separately.) |  | 4pcs/per model<br>(Please refer to Installation Diagram) |
| 4 | Terminal cover<br>MW'S Order NO. :PEE4TBC-03A<br>(Optional accessories can be purchased separately.) |  | 1pcs/per model |

## ■ Installation Diagram

