



1000W Ultra-High Peak Power Supply

HRPG-1000N3 series

User's Manual



## Features

- Universal AC input / Full range
- Built-in active PFC function, PF>0.95
- High efficiency up to 94%
- Withstand 300VAC surge input for 5 seconds
- Up to 320% peak power capability
- Protections: Short circuit / Overload / Over voltage / Over temperature
- Built-in cooling fan ON-OFF control
- Current sharing up to 4000W (3+1)
- Built-in DC OK / remote ON-OFF / remote sense functions
- Standby power 5V@0.3A
- No load power consumption<0.85W (Note.6)
- 5 years warranty

## Description

HRPG-1000N3 series is a 1000W single output AC/DC with ultra-high peak power supply. This series operates for 90~264 VAC input voltage and offers models with different rated voltage ranging between 12 and 48 V that can satisfy the demands for all kinds of industrial equipments. Each model is cooled by the built-in fan with speed control, working for the temperature up to 70°C. Moreover, HRPG-1000N3 has various built-in functions such as auxiliary power, remote sense and remote on-off control, offering vast design flexibility for industrial application. It can provide 320% short-duration peak power for motor applications and electromechanical loads requiring much higher power during start-up.

## Model Encoding

HRPG -1000N3 - 12

- Output voltage (12/24/36/48V)
- 3 times peak power
- Rated wattage
- Series name

## Applications

- Factory control or automation apparatus
- Test and measurement instrument
- Laser related machine
- Aging equipment
- RF application
- For inductive and capacitive load

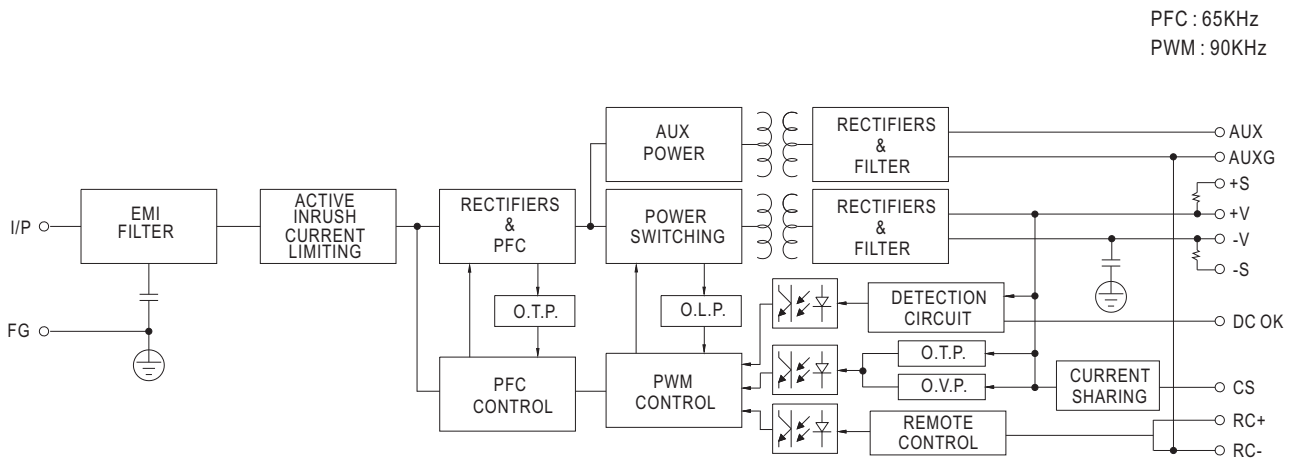
## GTIN CODE

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

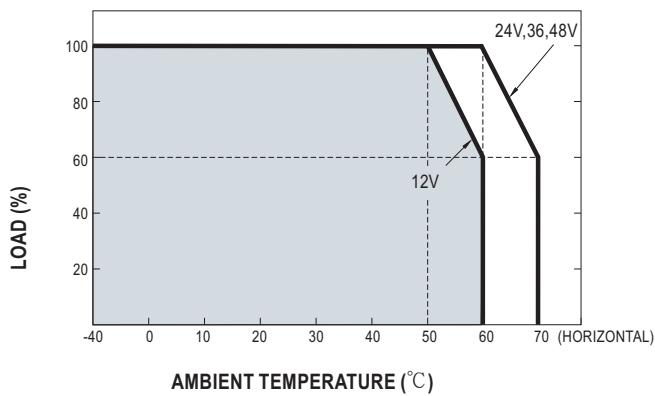
## SPECIFICATION

MODEL		HRPG-1000N3-12	HRPG-1000N3-24	HRPG-1000N3-36	HRPG-1000N3-48	
OUTPUT	DC VOLTAGE	12V	24V	36V	48V	
	RATED CURRENT	80A	42A	28A	21A	
	CURRENT RANGE	0 ~ 80A	0 ~ 42A	0 ~ 28A	0 ~ 21A	
	RATED POWER	960W	1008W	1008W	1008W	
	RIPPLE & NOISE (max.) <small>Note.2</small>	150mVp-p	200mVp-p	250mVp-p	250mVp-p	
	VOLTAGE ADJ. RANGE	11 ~ 14V	22 ~ 28V	32 ~ 38V	46 ~ 56V	
	VOLTAGE TOLERANCE <small>Note.3</small>	±2.0%	±1.0%	±1.0%	±1.0%	
	LINE REGULATION	±0.5%	±0.5%	±0.5%	±0.5%	
	LOAD REGULATION	±2.0%	±0.5%	±0.5%	±0.5%	
	SETUP, RISE TIME	1000ms, 50ms/230VAC      2000ms, 50ms/115VAC at full load				
HOLD UP TIME (Typ.)	16ms/230VAC      16ms/115VAC at full load					
INPUT	VOLTAGE RANGE	90 ~ 264VAC(300VAC for 5 sec.)      127 ~ 370VDC				
	FREQUENCY RANGE	47 ~ 63Hz				
	POWER FACTOR (Typ.)	PF>0.95/230VAC      PF>0.99/115VAC at full load				
	EFFICIENCY (Typ.)	91.5%	93%	93%	94%	
	AC CURRENT (Typ.)	8.5A/115VAC      5A/230VAC				
	INRUSH CURRENT (Typ.)	25A/115VAC      40A/230VAC				
	LEAKAGE CURRENT	<1.2mA / 240VAC				
PROTECTION	OVERLOAD <small>Note.4</small>	Output power >105% rated for more than 5 seconds then shut down o/p voltage, re-power on to recover Output power > 320% rated then shut down o/p voltage, re-power on to recover for 12V Output power > 350% rated then shut down o/p voltage, re-power on to recover for 24V, 36V and 48V				
	OVER VOLTAGE	14.5 ~ 16.5V	29 ~ 33V	39 ~ 46V	58 ~ 65V	
		Protection type : Shut down o/p voltage, re-power on to recover				
	OVER TEMPERATURE	Shut down o/p voltage, recovers automatically after temperature goes down				
FUNCTION	CURRENT SHARING	Up to 4000W or (3+1) units. Please refer to the function manual.				
	REMOTE ON-OFF CONTROL	Power ON : short; Power OFF : open. Please refer to the function manual.				
	REMOTE SENSE	Compensate voltage drop on the load wiring up to 0.5V. Please refer to the function manual.				
	DC-OK SIGNAL	The TTL signal out, PSU turn on = 3.3 ~ 5.6V ; PSU turn off = 0 ~ 1V. Please refer to the function manual.				
	5V STANDBY	5VSB : 5V@0.3A; tolerance ±5%, ripple : 50mVp-p(max.)				
	FAN CONTROL	Fan on/off by NTC(RT50) or 30% load min.				
ENVIRONMENT	WORKING TEMP.	-40 ~ +70℃ (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 ~ 50℃)				
	VIBRATION	10 ~ 500Hz, 5G 10min./1cycle, 60min. each along X, Y, Z axes				
SAFETY & EMC	SAFETY STANDARDS	UL62368-1, CAN/CSA C22.2 No. 62368-1, TUV BS EN/EN62368-1, AS/NZS62368.1, EAC TP TC 004 approved				
	WITHSTAND VOLTAGE	I/P-O/P:3KVAC    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℃ / 70% RH				
	EMC EMISSION	Parameter	Standard	Test Level / Note		
		Conducted	BS EN/EN55032 (CISPR32)	Class B		
		Radiated	BS EN/EN55032 (CISPR32)	Class B		
		Harmonic Current	BS EN/EN61000-3-2	Class A		
		Voltage Flicker	BS EN/EN61000-3-3	-----		
	EMC IMMUNITY		BS EN/EN55035, BS EN/EN61000-6-2			
		Parameter	Standard	Test Level / Note		
		ESD	BS EN/EN61000-4-2	Level 3, 8KV air ; Level 2, 4KV contact		
		Radiated	BS EN/EN61000-4-3	Level 3		
		EFT / Burst	BS EN/EN61000-4-4	Level 3		
		Surge	BS EN/EN61000-4-5	Level 4, 2KV/Line-Line 4KV/Line-Earth		
		Conducted	BS EN/EN61000-4-6	Level 3		
Magnetic Field		BS EN/EN61000-4-8	Level 4			
Voltage Dips and Interruptions		BS EN/EN61000-4-11	>95% dip 0.5 periods, 30% dip 25 periods, >95% interruptions 250 periods			
OTHERS	MTBF	989.2K hrs min.    Telcordia SR-332 (Bellcore) ;    130.6K hrs min.    MIL-HDBK-217F (25℃)				
	DIMENSION	218*105*61.5mm (L*W*H)				
	PACKING	1.46Kg;8pcs/12.8Kg/1.58CUFT				

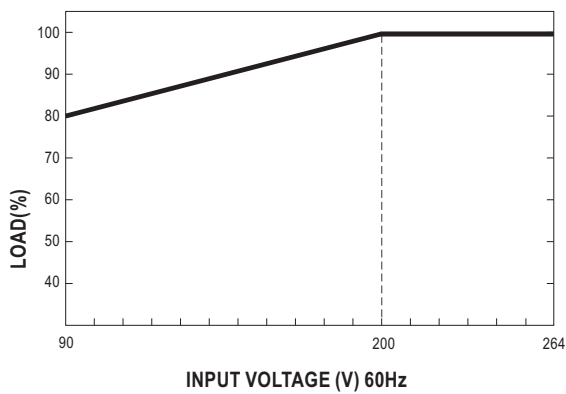
## Block Diagram



## Derating Curve



## Output Derating VS Input Voltage



## Function Manual

### 1. Peak Power

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

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

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

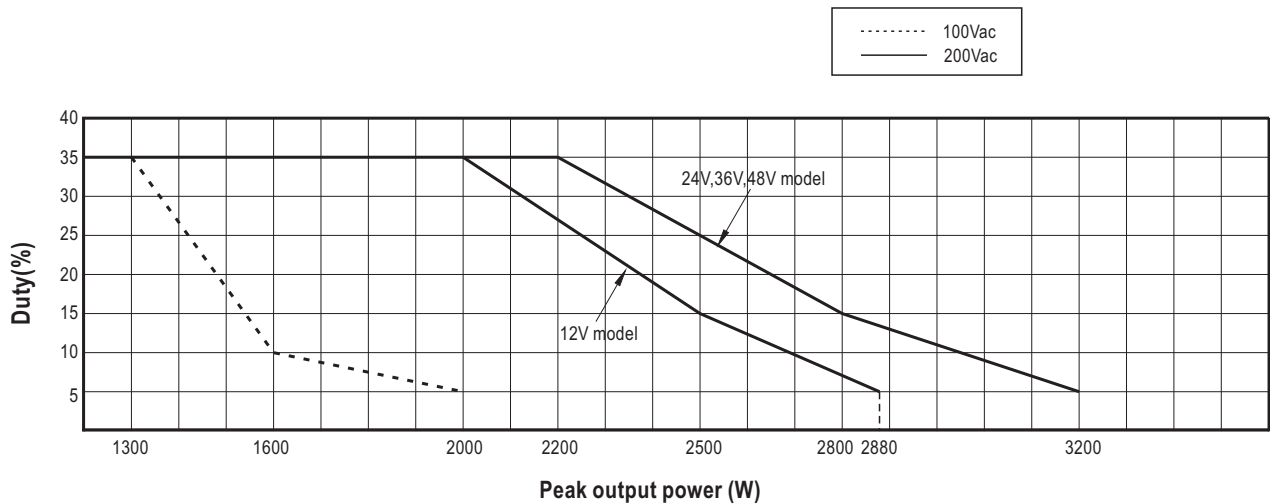
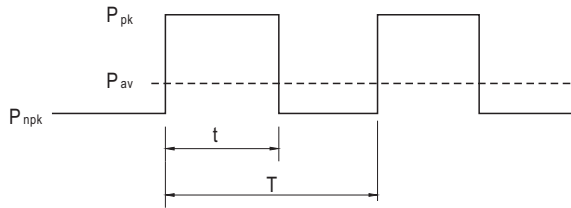
$P_{pk}$ : Peak output power (W)

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

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

$t$ : Peak power width (sec)

$T$ : Period (sec)



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

$V_{in} = 200V$      $\text{Duty}_{max} = 25\%$

$P_{av} = P_{rated} = 1008W$

$P_{pk} = 2500W$

$t \leq 5 \text{ sec}$

$T \geq \frac{5 \text{ sec}}{25\%} \geq 20 \text{ sec}$

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

$P_{npk} \leq 511W$

## Function Description of CN100

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

## Function Manual

### 1.Remote Sense

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

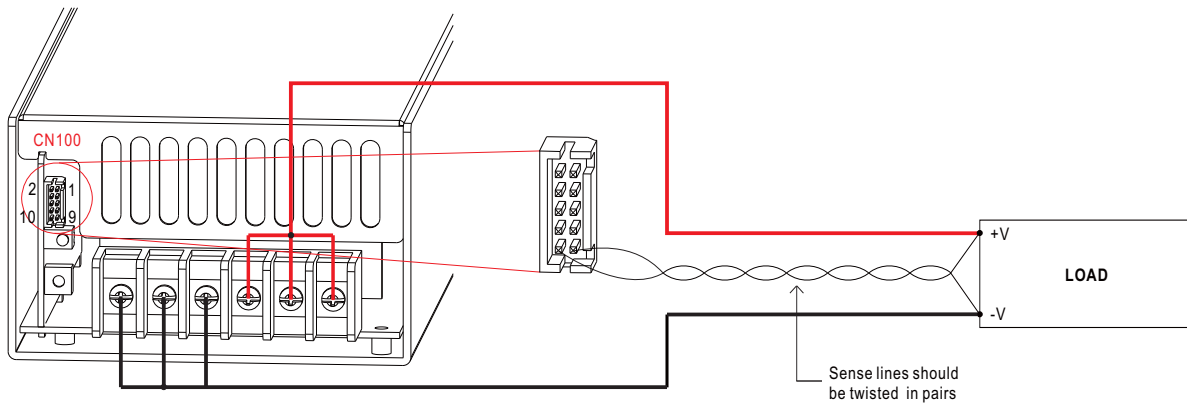


Fig 1.1

### 2.DC-OK Signal

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

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

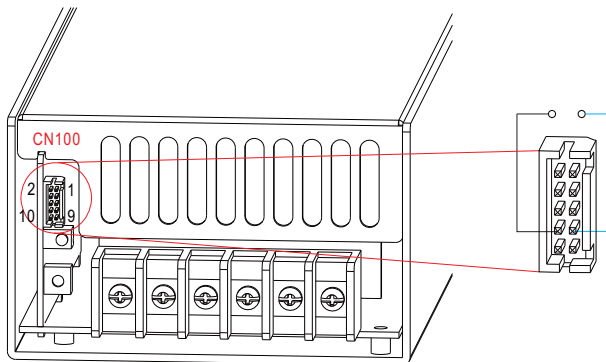


Fig 2.1

### 3.Remote ON-OFF Control

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

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

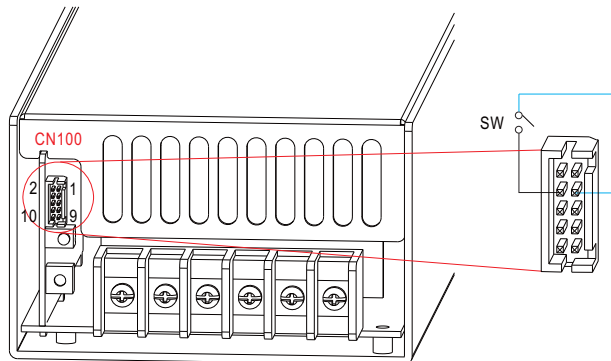


Fig 3.1

### 4.Current Sharing

HRPG-1000N3 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 0.2V.

※ 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

※ 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.

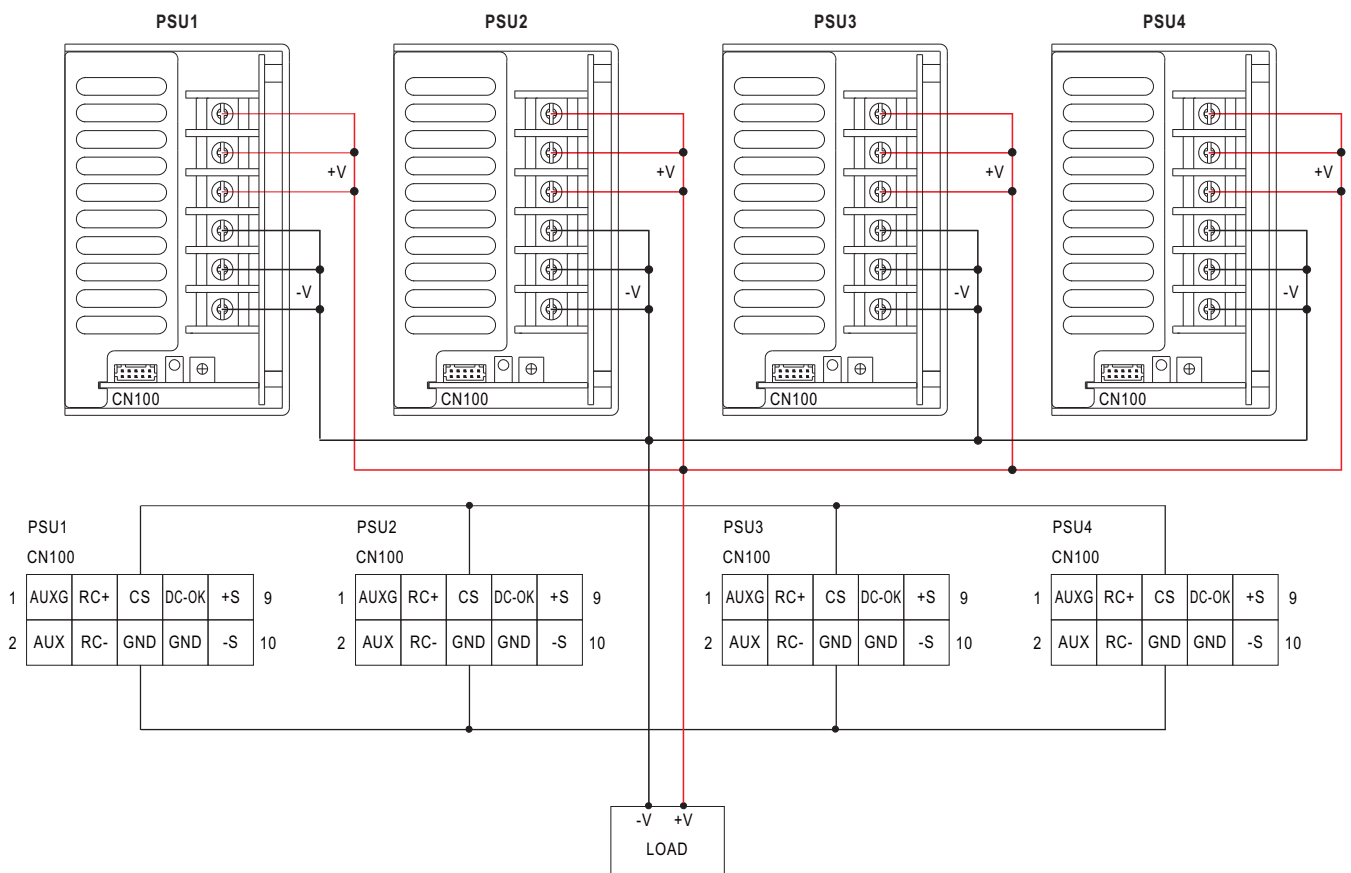
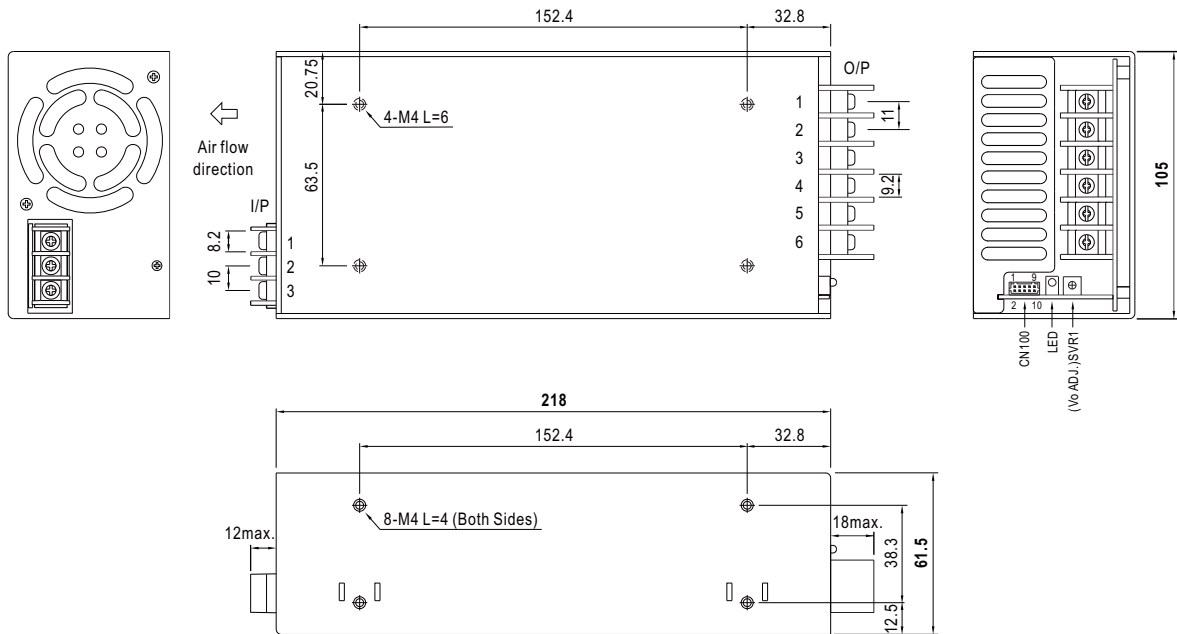


Fig 4.1

## Mechanical Specification

Case No. 977H Unit:mm



### AC Input Terminal Pin No. Assignment

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

### DC Output Terminal Pin No. Assignment

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

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

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

## Installation Manual

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