

## MPC2000-□ Series



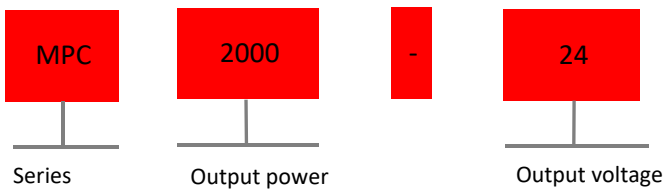
### ▲ Features

- Universal AC input/Full range
- Built-in active PFC function
- Forced air cooling by built-in DC fan
- Efficiency up to 92%
- Active current sharing up to 8000W(3+1)
- Built-in remote ON-OFF control/remote sense/auxiliary power/DC OK signal/Over temp. alarm signal
- Output voltage programmable
- Protections:short circuit/overload/over voltage/over temperature
- Optional conformal coating
- 5 years warranty

### ▲ Applications

- △ Industrial control or automation apparatus
- △ Test and measurement instrument
- △ Laser related machine
- △ Burn-in facility
- △ Digital broadcasting
- △ RF application

### ▲ Model Encoding



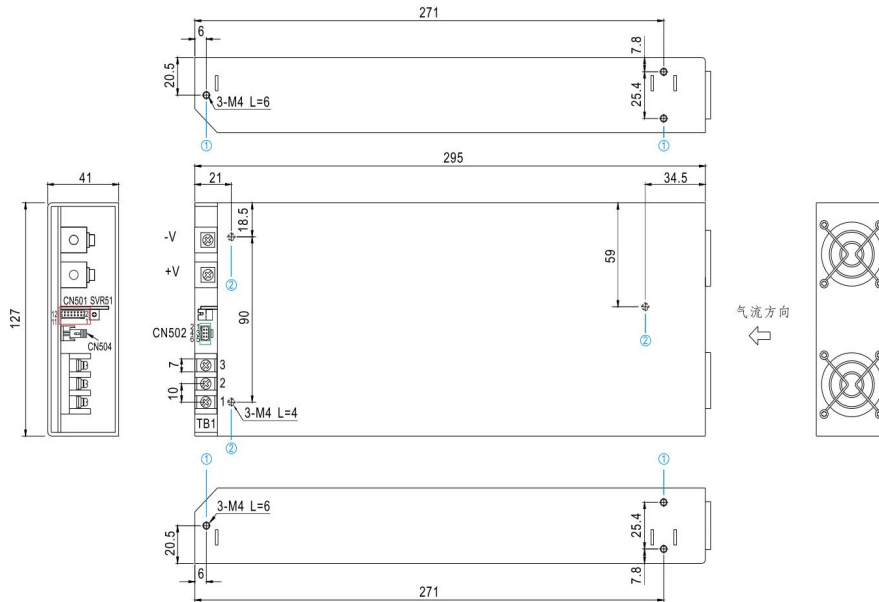


## Specification

Input			
Input voltage *1	90-264VAC~ 127-320VDC		
AC current	13A/115VAC~7A/230VAC	16A/115VAC~10A/230VAC	16A/115VAC~10A/230VAC
Frequency range	47-63Hz		
Inrush current(max.)	Cold start: 50A		
Output			
DC voltage	12V	24V	48V
Rated current	100A	80A	42A
Current range	0-100A	0-80A	0-42A
Rated power	1200W	1920W	2016W
Rippl & noise(max.) *2	150mVp-p	200mVp-p	300mVp-p
Voltage ADJ. range	10.5-14V	21-28V	42-56V
Voltage tolerance *3	±2%	±1%	±1%
Line regulation	±1%	±0.5%	±0.5%
Load regulation	±1%	±0.5%	±0.5%
Efficiency	87.00%	90.5%	92%
Start up, rise time	1500ms 60ms/230VAC(@Full load)		
Hold up time	16ms/230VAC(75% load)~10ms/230VAC(@Full load)		
Status indicator	Green LED		
Protection			
Overload	105%~125% of rated output power		
	Constant current limiting, shut down o/p voltage after 5 sec., Re-power on to recover		
Over voltage (V)	14.7-17.5V	29.5-35V	57.6-67.2V
	Shut down o/p voltage. Re-power on to recover		
Over temperature	Shut down O/P voltage, recover automatically after the temperature goes down		
Output voltage programmable (PV)	Output voltage can be adjusted within 40-115% of rated output voltage, please refer to Function manual		
Current sharing	Up to 8000W or (3+1) units, Refer to function manual please		
Auxiliary power(AUX)	5V @ 0.3A/12V @ 0.8A		
Remote On-Off control	By electrical signal or dry contact Power ON:open Power OFF:close. Please refer to the Function Manual.		
Remote sense	Compensate voltage drop on the load wire up to 0.5V. Please refer to the Function Manual.		
DC OK signal	TTL signal, Please refer to the Function Manual.		
Safety & EMC			
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°C/70%RH		
Safety standards	Design refer to EN IEC 62368-1、GB4943.1		
EMC emission	Parameter	Standard	Test level
	Conducted	EN 55032	Class A
	Radiated	EN 55032	Class A
	Voltage Flicker	EN 61000-3-3	Design refer to Class A
EMC immunity	Harmonic Current	EN IEC 61000-3-2	Class A
	Parameter	Standard	Test level
	ESD	EN 61000-4-2	Level 3 8KV air;Level 2 4KV contact
	Radiated Susceptibility	EN 61000-4-3	Level 3 10V/m
	EFT/Burest	EN 61000-4-4	Level 3 2KV
	Surge	EN 61000-4-5	Level 3 2KV/Line-Line;Level3 4kV/Line-Line-FG
	Conducted	EN 61000-4-6	Level 3 10V
Magnetic Field	EN 61000-4-8	Level 4 30A/m	
Voltage Dips and interruptions	EN 61000-4-11	<5% residual voltage for 0.5 cycles ,70% residual voltage for 25 cycles, <5% residual voltage for 250 cycles	

Environment		
Operating temperature	-35~+70 °C (Refer to "Derating curve")	
Storage temp & humidity	- 40~+85°C, 10~95%RH	
Operating humidity	20~90%RH, Non-condensing	
Vibration	10-500Hz,2G 10min/1 cycle, 60 min along with each X,Y,Z axes	
Others		
MTBF	≥159Khrs~Telcordia SR-332(Bellcore);≥46..3Khrs MIL-HDBK-217F(25°C)	
Protection class	IP20	
Weight	~1.95kg	
Dimension	295*127*41mm(L*W*H)	
Ordering	Description	Model
	MPC 2000W 100A/12V	MPC2000-12
	MPC 2000W 80A/24V	MPC2000-24
	MPC 2000W 42A/48V	MPC2000-48

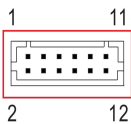
## Installation instruction



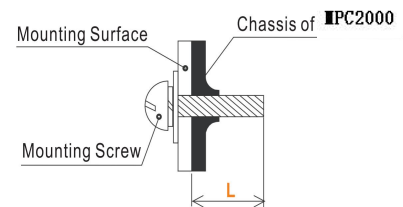
## Mounting instruction

Hole No.	Recommended screw size	Max. penetration depth L	Recommended mounting torque
①	M4	6mm	7~10Kgf-cm
②	M4	4mm	6~8Kgf-cm

Control PIN No. assignment(CN501):HRS DF11-12DP-2DS or equivalent



Mating housing	HRS DF11-12DS or equivalent
Terminal	HRS DF11-12SC or equivalent



## CN1 & CN2 internal connection

Pin No.	Assignment	Description
1	+S	Positive sensing for remote sense.
2	-S	Negative sensing for remote sense
3	PV	Connection for output voltage. (Note.1)programming
4	GND	This pin connect to the negative terminal(-V)
5	DC-OK	High (4.5 ~ 5.5V) : When the $V_{out} \leq 80\% \pm 6\%$ Low (0 ~ 0.5V) : When $V_{out} \geq 80\% \pm 6\%$ .. The maximum sourcing current is 10mA and only for output. (Note.2)
6	T-ALARM	High(4.5 ~ 5.5V): When the internal temperature (TSW1 or TSW2 open) exceeds the limit of temperature alarm. Low (0 ~ 0.5V) : When the internal temperature (TSW1 or TSW2 short) under the limit temperature. The maximum sourcingcurrent is 10mA and only for output. (Note.2)
7	Remote ON-OFF	The unit can turn the output on and off by electrical signal or dry contactbetween Remote ON-OFF and +5V-AUX. (Note.2)Close (4.5 ~ 5.5V) : Power OFF ; Open (0 ~ 0.5V) : Power ON ; The maximum input voltage is 5.5V
8,9,10	GND-AUX	Auxiliary voltage output GND, The signal return is isolated from the output terminals (+V & -V)
11	+5V-AUX	Auxiliary voltage output, 4.5~5.5V, referenced to.GND-AUX. The maximum load current is 0.3A This output has the built-in "Oring diodes" and is not controlled by the Remote ON-OFF control.
12	+12V-AUX	Auxiliary voltage output, 10.6~13.2V, referenced to.GND-AUX. The maximum load current is 0.3A This output has the built-in "Oring diodes" and is not controlled by the Remote ON-OFF control.

Note1: Non-isolated signal, referenced to the output terminals (-V)

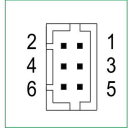
Note2: Isolated signal, referenced to.GND-AUX

## LED Indicators & Corresponding Signal at Function Pins

Function	LED	Description	Signal*	Power supply output
DC-OK	GREEN	When output voltage $\cong 80\% \pm 5\%$ of $V_o$ rated.	0 ~ 0.5V	ON
DC-NG	RED	When output voltage $\leq 80\% \pm 5\%$ of $V_o$ rated.	4.5 ~ 5.5V	ON
T-OK	GREEN	When internal temp (TSW1 & TSW2 short) is within safe limit	0 ~ 0.5V	ON
T-ALARM	RED	When internal temp (TSW1 or TSW2 open) exceeds the limit of temp alarm	4.5 ~ 5.5V	OFF

\* Signal between function pin and "GND-AUX"

Control PIN No. assignment(CN502):HRS DF11-6DP-2DSA or equivalent



Mating housing	HRS DF11-6DS or equivalent
Terminal	HRS DF11-SC or equivalent

Pin No.	Assignment	Description
1, 2	DA	Differential digital signal for parallel control.
3,4	DB	Differential digital signal for parallel control.
5,6	GND	These pins connect to negative terminal (-V).

Control PIN No. assignment (CN504)

Pin No.	Function	Description
1, 2	Terminal resistance	CN504 is the selector of terminal resistor that is designed for DA/DB signals and parallel control function

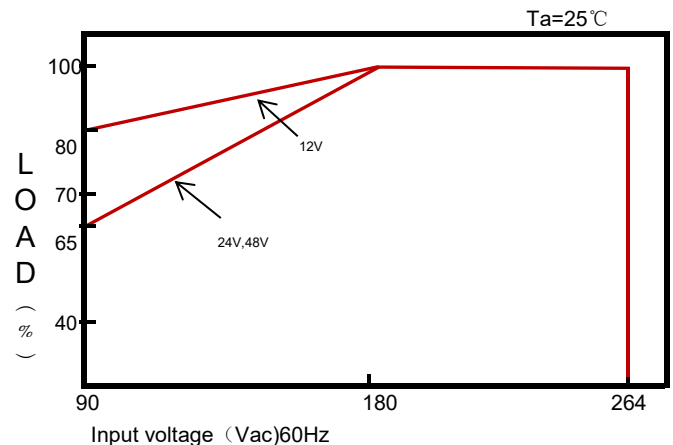
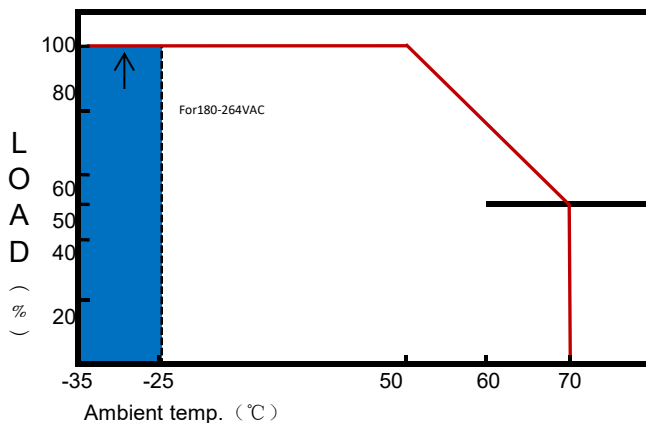
AC input terminal PIN No. assignment

Pin No.	Assignment	Diagram	Max. mounting torque
1	AC/N		18Kgf-cm
2	AC/L		
3	FC $\pm$		

DC Output Terminal Pin No. Assignment

Pin No.	Diagram	Max. mounting torque
+V, -V		10Kgf-cm

## Derating curve



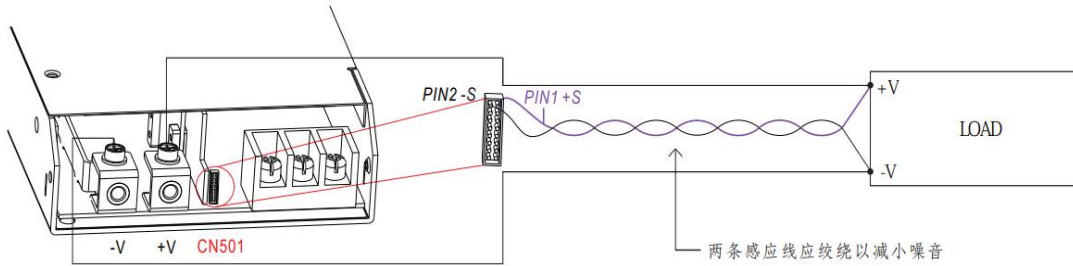
- Note:**
- Derating may be needed under low input voltages. Please check the derating curve for more details.
  - Ripple & noise are measured at 20MHZ of bandwidth by using a 12' twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor.
  - Tolerance: includes set up tolerance, line regulation and load regulation.
  - All parameters are measured at 230VAC input, rated load and 25°C of ambient temperature unless otherwise specified.
  - The power supply is considered a component which will be installed into a final equipment. All the EMC tests are 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 the EMC directives
  - 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).

## Function Manual

### 1. Remote sense

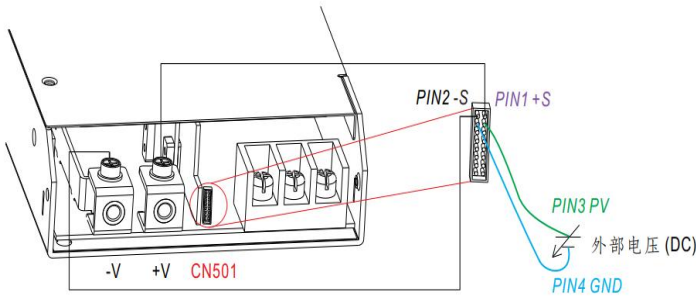
The Remote Sense compensates voltage drop on the load wiring up to 0.5V

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

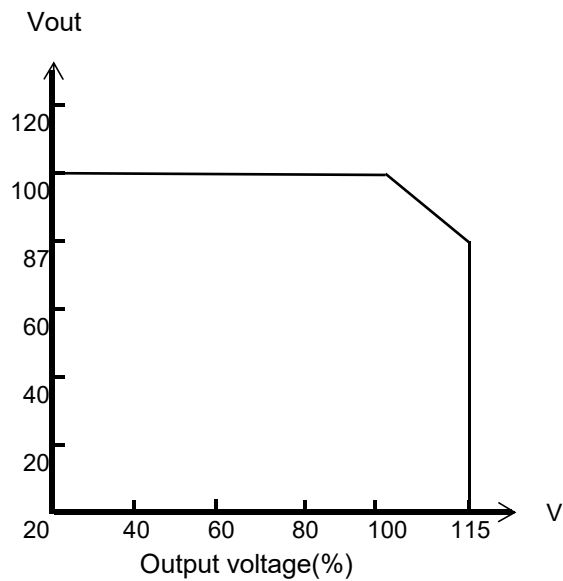
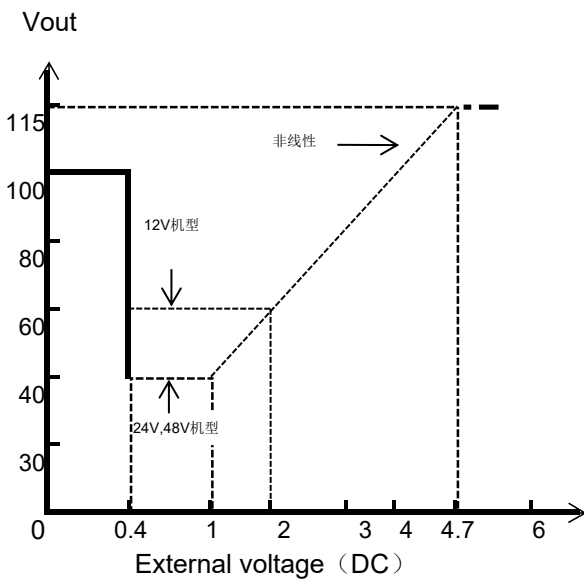


### 2. Output Voltage Programming (or, PV / remote voltage programming / remote adjust / margin programming / dynamic voltage trim)

In addition to the adjustment via the built-in potentiometer, the output voltage can be trimmed to 40~115% of the nominal voltage by applying External Voltage

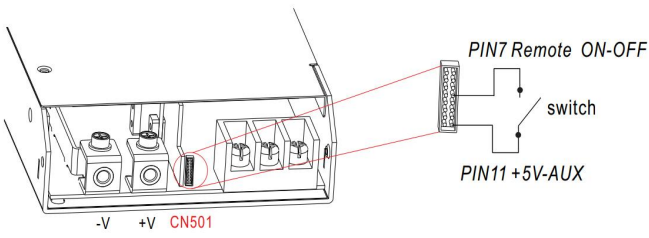


+S & +V, -S & -V also need to be connected to CN501



### 3. Remote On-Off Control

The power supply can be turned ON/OFF individually or along with other units by using the "Remote ON-OFF" function



Between Remote ON-OFF & +5V-AUX	Output
Switch Open_x005f_x005f_x005f_x0001	ON
Switch Short_x005f_x005f_x005f_x0001	OFF

### 4. Current Sharing with Remote Sense

MPC2000 has the built-in active current sharing function and can be connected in parallel, up to 4 units, to provide higher output power as shown below :

- ※ The power supplies should be paralleled using short and large diameter wire 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 of following equation
- ※ Max. 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

#### CN502/CN504 function pin connection

Parallel	PSU1		PSU2		PSU3		PSU4	
	CN502	CN504	CN502	CN504	CN502	CN504	CN502	CN504
1 unit	X	V	-	-	-	-	-	-
2 unit	V	V	V	V	-	-	-	-
3 unit	V	V	V	X	V	V	-	-
4 unit	V	V	V	X	V	X	V	V

◎V is CN502/CN504 connected to plug pin, X is CN502/CN504 not connected to plug pin

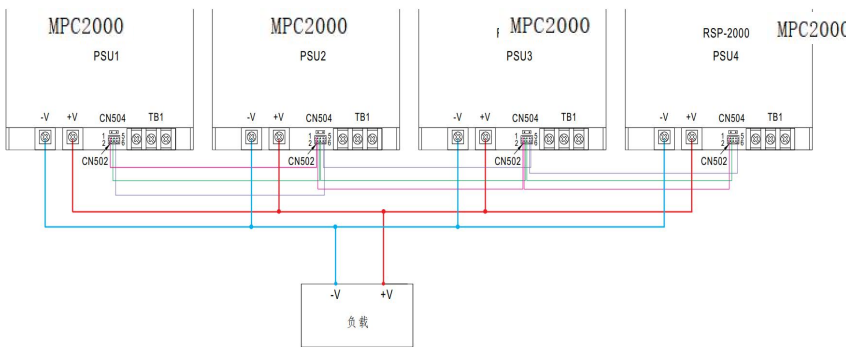
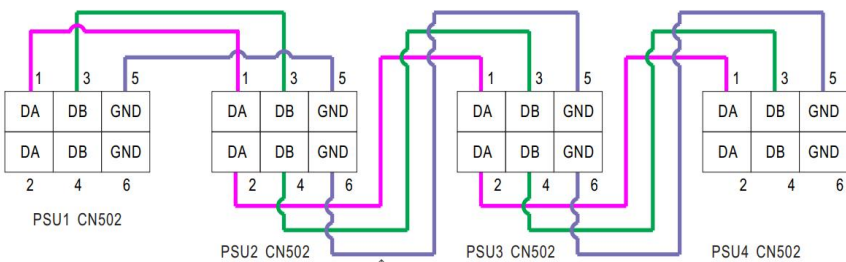


图 4.1



如果CN502线材过长，需两条绞绕以避免产生噪声