

## FEATURES

## 3000W Single Output Power Supply MP3000-1 Series

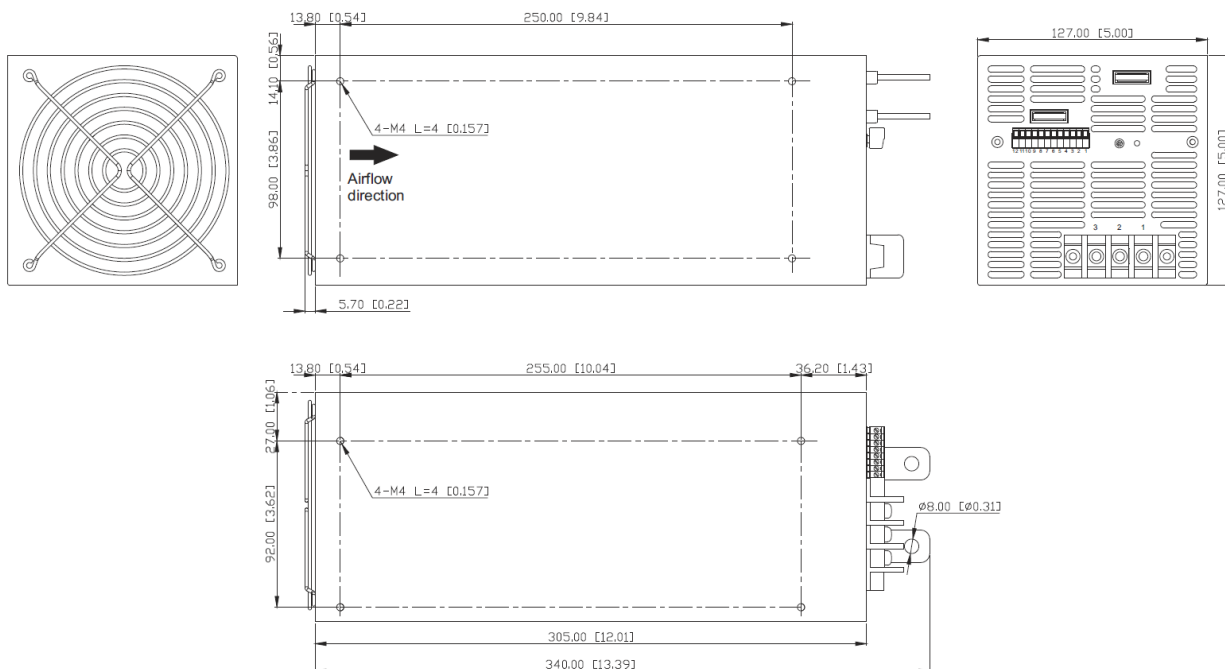
- 90-264Vac Input With Active PFC
- Programmable Output Voltage
- Programmable Output Current
- High Efficiency Up To 90%
- +5V / 0.5A Auxiliary Output
- Intelligent LED Indicators
- Standard 5x5 Profile, High Density 10.8w / In<sup>3</sup>
- Forced Current Sharing At Parallel Operation
- Power OK Signal ( Power Good, Logic Low )
- Remote ON-OFF, Remote Sense Function
- 3 Year Warranty
- Protections : OVP, OLP, OTP, SCP, Fan Failure Notification



## SPECIFICATIONS

Model		MP3000-1121	MP3000-1151	MP3000-1241	MP3000-1271	MP3000-1481
Output	DC Voltage Range	12V	15V	24V	27V	48V
	Rated Current	250A	200A	125A	111A	62.53A
	Current Range	0 ~ 250A	0 ~ 200A	0 ~ 125A	0 ~ 111A	0 ~ 62.5A
	Rated Power	3000W	3000W	3000W	3000W	3000W
	Ripple & Noise (Max.) (2)	150mVp-p	150mVp-p	150mVp-p	150mVp-p	150mVp-p
	Voltage Adj. Range	±5.0% Typical adjustment by potentiometer				
	Voltage Tolerance (3)	±1.0%				
	Line Regulation	±0.5%				
	Load Regulation	±0.5%				
	Setup, Rise Time	800ms, 200ms at full load				
Input	Hold Up Time (Typ.)	±1.0%				
	Voltage Range (4)	90 ~ 264VAC 127 ~ 370VDC				
	Frequency Range	47 ~ 63Hz				
	Power Factor (Typ.)	EN61000-3-2 (0.98 / 230VAC, 0.99 / 115VAC at full load)				
	Efficiency (Typ.)	87%	88%	89%	89%	90%
	AC Current (Typ.)	36A / 115VAC, 18A / 230VAC				
	Inrush Current (Typ.)	60A / 115VAC, 90A / 230VAC				
Protection	Leakage Current	<2.5mA / 240VAC				
	Over Load	105 % ~ 110 % rated output power				
	Over Voltage	Protection type : Constant current limiting, Latch-style (Recovery after reset AC power or inhibit)				
	Over Temperature	Variable OVP, 120% ± 5% Vout. Protection type: Latch-style (Recovery after reset AC power or inhibit)				
Function		80°C ±5°C				
		Protection type : Shut down o/p voltage, Recovery after reset AC power ON or inhibit.				
	Auxiliary Power	5V @ 0.5A (+/- 3%)				
	Remote ON/OFF Control	External switch or NPN Transistor to turn ON / OFF				
	Power OK Signal	Open drain signal low when PSU turns on, Max. sink current: 20mA, Max. drain voltage: 40V.				
	Output Voltage Trim	Adjustment of output voltage is between 30 ~ 105% of rated output				
Environmental	Output Current Trim	Adjustment of output current is between 40 ~ 105% of rated output				
	Parallel Operation (5)	Single wire				
	Working Temp.	-25 ~ +60°C (Refer to output load de-rating curve)				
	Working Humidity	20 ~ 90% R.H non-condensing				
	Storage Temp., Humidity	-40~+85°C, 10 ~95% R.H				
Safety & EMC (6)	Temp. Coefficient	±0.02%/°C (0 ~ 50°C)				
	Vibration	10 ~ 500Hz, 1G 10min./1 cycle, period for 60 min each along X,Y,Z axes Compliance to IEC 60068-2-6-2007				
	Safety Standards	UL 60950-1, 2nd Edition, TUV EN60950-1 : 2006+A11 Approved				
	Withstand Voltage	I/P-O/P: 3KVAC I/P-FG: 1.5KVAC O/P-FG: 0.5KVAC				
	Isolation Resistance	I/P-O/P, I/P-FG, O/P-FG: 100MΩ / 500VDC				
	EMI Conduction & Radiation	EN55022: 2006 Class A				
Others	Harmonic Current	EN61000-3-2: 2006 Class B, EN61000-3-3: 1995+A1: 2001+A2: 2005				
	EMS Immunity	EN61204-3: 2000, EN55024: 1998+A1: 2001+A2: 2003 light industry level, criteria A				
	Cooling	Controlled by power rating & temperature (Internal ball bearing fan)				
	Dimension (L*W*H)	305x127x127 mm / 12.01x5.0x5.0 inch				
	Packing	6.4kg ; 2Pcs / 12.8kg / 0.46 CUFT				

## Mechanical Specifications



AC Input Terminal  
Pin No. Assignment

Pin No.	Assignment
1	ACL
2	ACN
3	⏏

Control pin number assignment

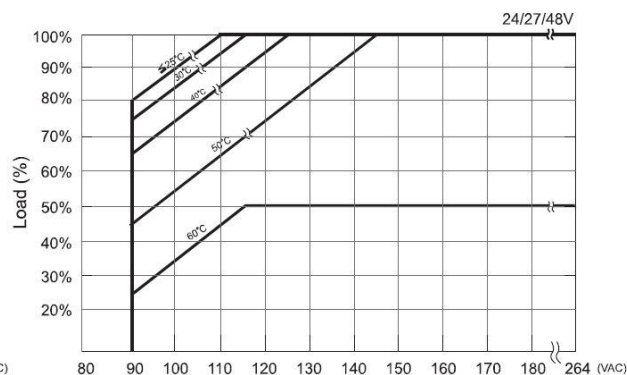
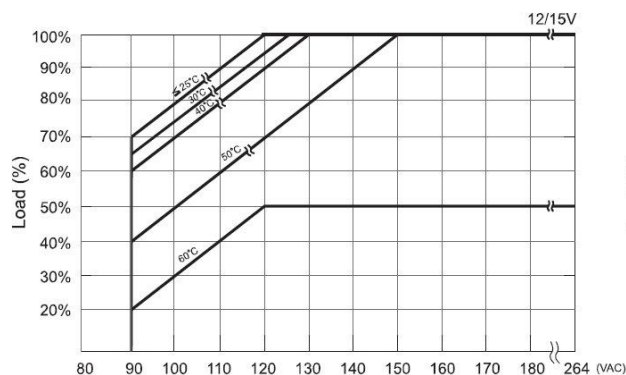
Pin No.	Assignment	Pin No.	Assignment	Pin No.	Assignment	Mating Housing	Terminal
1	VO+	5	AUX	9	P.OK	ECH350R-12P	EC350V-12P
2	VS+	6	EN+	10	VCI		
3	VS-	7	EN-	11	ACI		
4	VO-	8	GND	12	PAR		

## Connector Description

Pin No.	Function	Description
1	VO+	Local output voltage sense (+)
2	VS+	Remote voltage sense (+)
3	VS-	Remote voltage sense (-)
4	VO-	Local output voltage sense (-)
5	AUX	+5V / 0.5A Auxiliary power
6	EN+	Inhibit ON/OFF (+)
7	EN-	Inhibit ON/OFF (-)
8	GND	Ground
9	P.OK	Power OK
10	VCI	V Program
11	ACI	I Program
12	PAR	Parallel operation current share

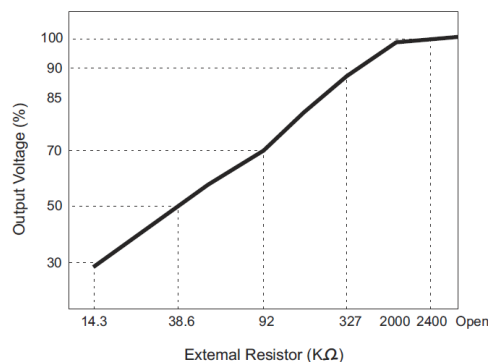
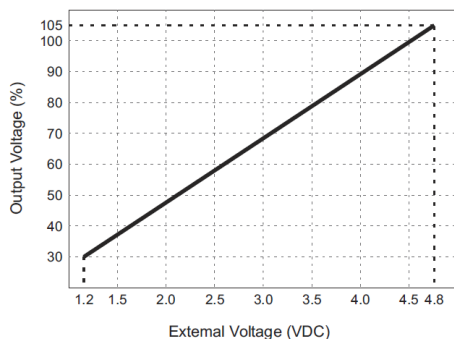


## Derating Curves



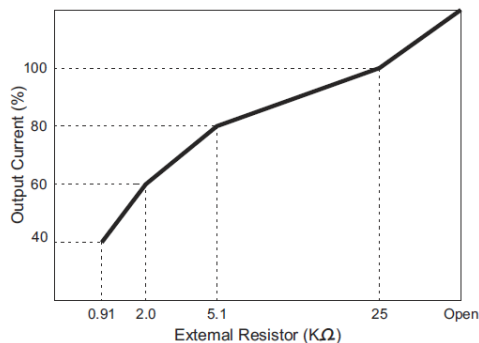
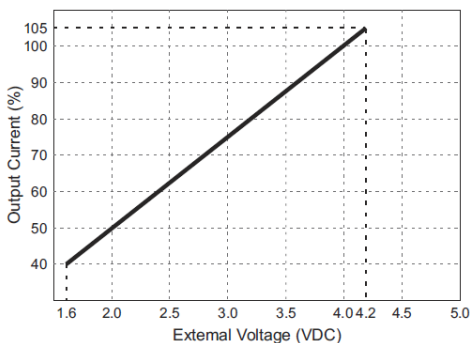
## Feature Options & Configuration

### 1. Output Voltage Trim



1	VO+	VS+	VS-	VO-	AUX	EN+	6
7	EN-	GND	P.OK	VCI	ACI-	PAR	12

### 2. Output Current Trim



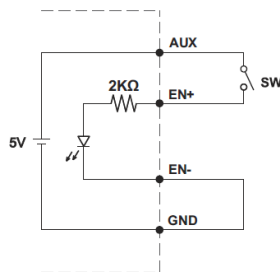
1	VO+	VS+	VS-	VO-	AUX	EN+	6
7	EN-	GND	P.OK	VCI	ACI-	PAR	12

330Ω

1	VO+	VS+	VS-	VO-	AUX	EN+	6
7	EN-	GND	P.OK	VCI	ACI-	PAR	12

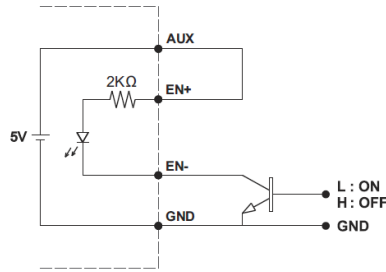
### 3. Remote ON/OFF

(A)



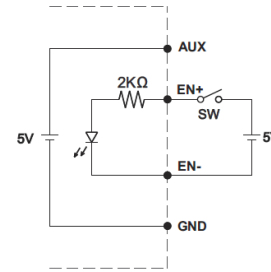
(A) Using internal 5V auxiliary source

(B)



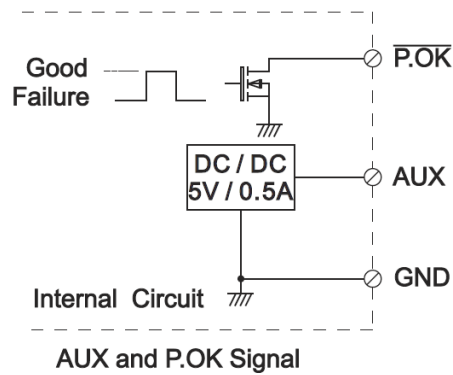
(B) ON / OFF Control by NPN transistor

(C)



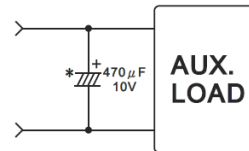
(C) Using external voltage source

### 4. Power OK Signal



\*Place an additional capacitor to have a better performance of auxiliary power operation.

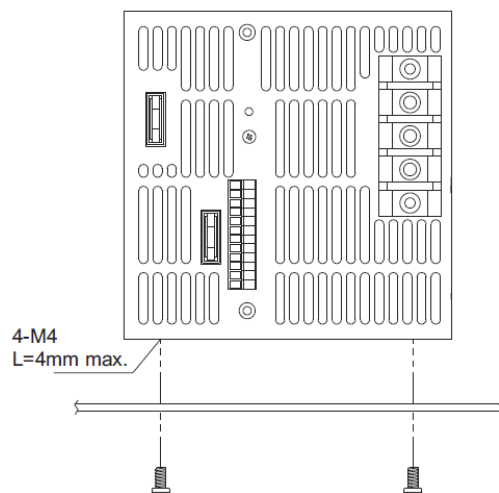
\*The grounding of "AUX" power should be connected to "GND" port. If "V-" is connected as Grounding, make sure to short the GND and V- ports.



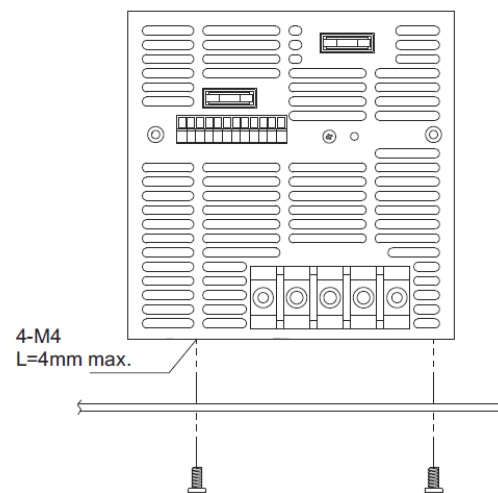
## Installation Instructions

1-1 Recommended standard mounting methods:

(a)



(b)

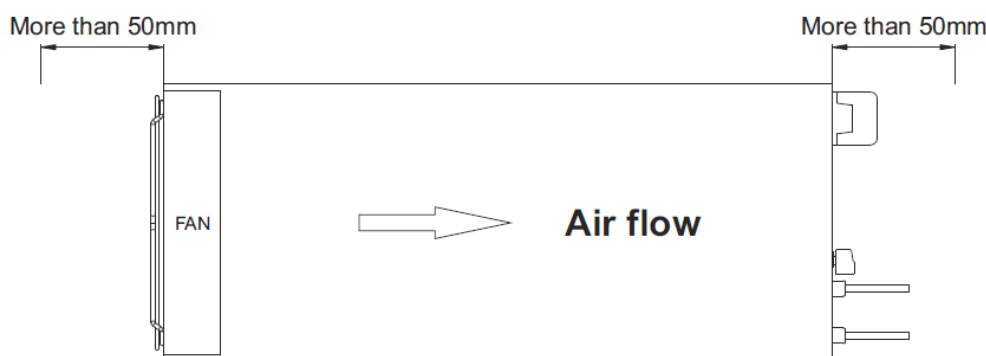


## 2. Mounting Method

2-1 There are ventilating holes on the front and back side panels, do not obstruct; allow 50mm at least for air flow.

2-2 The Maximum allowable penetration of screw is 4mm.  
Incomplete threading should not be penetrated.

2-3 Recommended the torque of mounting screw:  
M4 screw: 1.27N • m (13.0kgf • cm)



## Notes

1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature.
2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47 uf parallel capacitor.
3. Tolerance: includes set up tolerance, line regulation and load regulation.
4. Derating may be needed under low input voltages. Please check the derating curve for more details.
5. In parallel operation, only one unit may operate if the total output load is less than 5% of rated load.
6. The power supply is considered a component which will be installed into a final system. The final system must be tested to meet EMC directives.

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## FEATURES

## 3000W Single Output Power Supply MP3000-2 Series

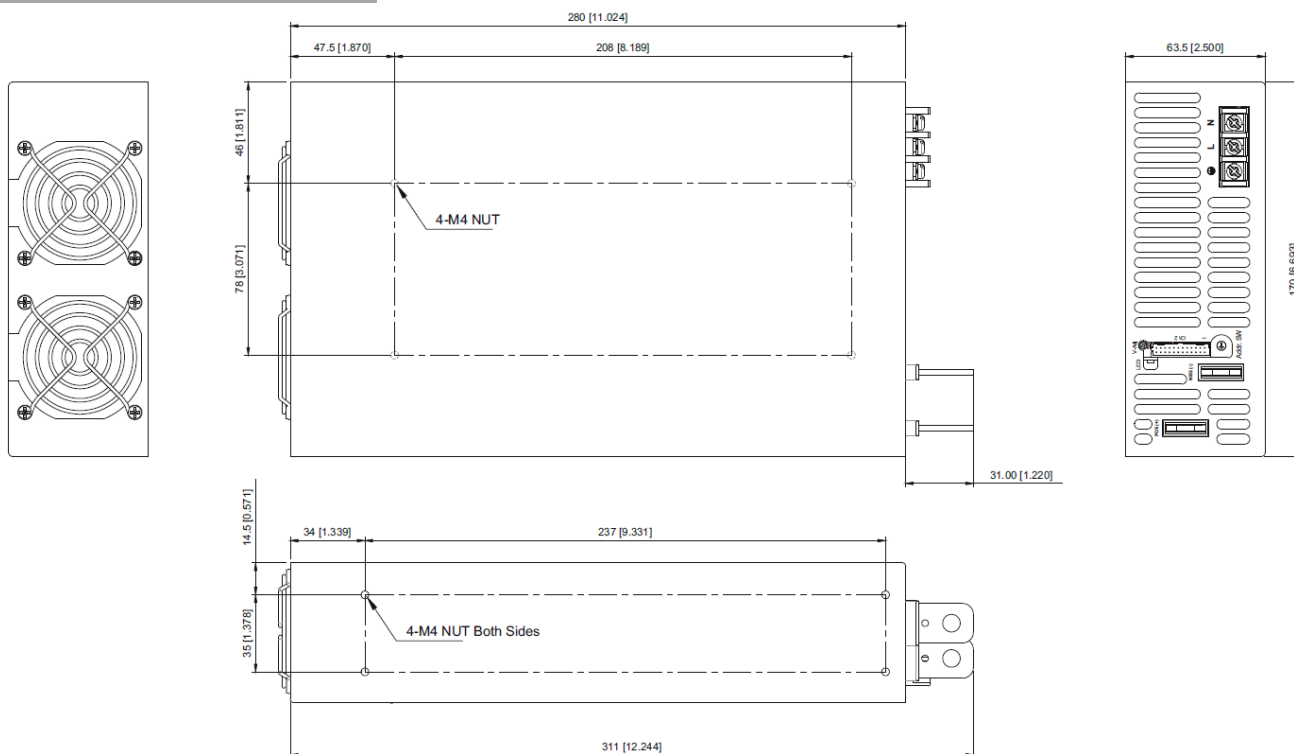
- 90-264Vac Input With Active PFC
- Programmable Output Voltage & Current
- High Power Density: 16.3W / inch<sup>3</sup>
- RS232, RS485 & I<sup>2</sup>C Communication
- Selectable 5Vdc Or 9Vdc Auxiliary Output
- Forced Current Sharing At Parallel Operation
- High Efficiency Up To 93%
- Power OK Signal
- Remote On/Off
- Remote Sense
- UL/cUL60950 & CE Certified
- 3 Year Warranty



## SPECIFICATIONS

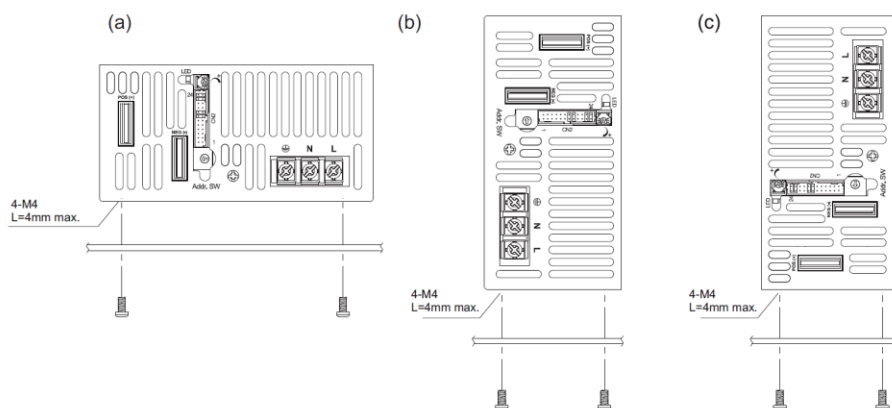
Model Number		Voltage	Current	Power (Watts)	Ripple & Noise (2)	Efficiency	Power Factor
MP3000-2121		12Vdc	0-200A	2400	150mVp-p	88%	.95 @230Vac EN61000-3-2
MP3000-2151		15Vdc	0-160A	2400	150mVp-p	89%	
MP3000-2241		24Vdc	0-125A	3000	200mVp-p	91%	
MP3000-2301		30Vdc	0-100A	3000	200mVp-p	91%	
MP3000-2361		36Vdc	0-83A	3000	200mVp-p	92%	
MP3000-2481		48Vdc	0-62A	3000	200mVp-p	92%	
MP3000-2601		60Vdc	0-50A	3000	300mVp-p	93%	
Output	Manual Voltage Adj.	±5.0% Typical by potentiometer					
	Voltage Tolerance (3)	±2.0%					
	Line Regulation	±1%					
	Load Regulation	±1%					
	Setup, Rise Time	800ms, 200ms at full load					
	Hold Up Time	14mS @230Vac & full load (Typ.)					
Input	Auxiliary Power	Selectable +5V / 0.5A or +9V / 0.3A auxiliary output					
	Voltage Range	90 ~ 264Vac 127 ~ 370Vdc (See derating curve)					
	Frequency Range	47 ~ 63Hz					
	AC Current	19.7A @ 115VAC, 14.5A @ 230VAC (Typ.)					
	Inrush Current	33A / 115VAC, 65A/ 230VAC (Typ.)					
	Leakage Current	<2.5mA / 240VAC					
Protection	Overload	105% rated output power, constant current limiting (Typ)					
	Over Voltage	Variable OVP, 120 ± 7% Vout. Refer to VCI VS OVP curve. Latching recycle AC or inhibit to restart					
	Over Temperature	85°C ±5°C Internal Temp., automatically restarts after cooling					
Function	Remote ON/OFF Control	External switch or NPN transistor					
	Power OK Signal	Open drain signal low when PSU turns on, Max. sink current: 20mA, Max. drain voltage: 40V.					
	Output Voltage Adj.	Output voltage adjustable between 0 ~ 105% of rated output					
	Output Current Adj.	Output current adjustable between 0 ~ 105% of rated output					
	Parallel Operation (4)	Single wire (See diagram below)					
Environ ment	Working Temp.	-25 ~ +60°C (See derating curve)					
	Working Humidity	20 ~ 90% R.H non-condensing					
	Storage Temp., Humidity	-40~+85°C, 10 ~95% R.H					
	Temp. Coefficient	±0.02%/°C (0 ~ 50°C)					
Safety & EMC	Safety Standards	UL 60950-1, 2nd Edition Approved, CE					
	Withstand Voltage (5)	I/P-O/P: 3KVac (4242Vdc), I/P-FG: 1.5KVac (2121Vdc), O/P-FG: 0.5KVac (707Vdc)					
	Isolation Resistance	I/P-O/P, I/P-FG, O/P-FG: 100MΩ / 500Vdc					
	EMI Conduction & Radiation	Certified EN 55022; EN 61204-3; EN 61000-6-3 – Class A					
	Harmonic Current	EN 61000-3-2; EN 61000-3-3					
	EMS Immunity	EN 55024; EN 61204-3; EN 61000-6-1; IEC 61000-4-2, 3, 4, 5, 6, 8, 11					
Others	Cooling	Load and thermally controlled fan					
	Dimension (W*H*L)	170x63.5x280 mm / 6.693x2.500x11.024 in.					
	Packing	3.8kg/ea ; 4pcs / 16.2kg GW					

## Mechanical Specifications



### 1. Mounting Directions

1-1 Recommended standard mounting methods:

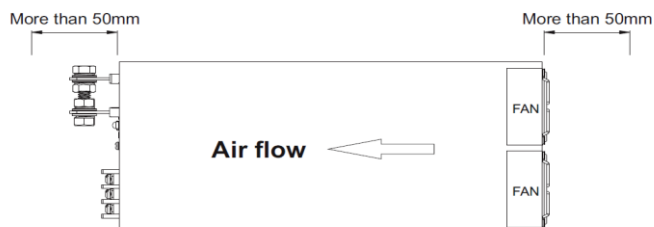


### 2. Mounting Method

2-1 There are ventilating holes on the front and back side panels, do not obstruct; allow 50mm at least for air flow.

2-2 The Maximum allowable penetration of screw is 4mm. Incomplete threading should not be penetrated.

2-3 Recommended the torque of mounting screw:  
M4 screw: 1.27N • m (13.0kgf • cm)





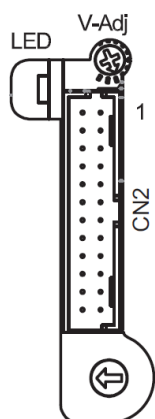
## Connectors & Functional Description

AC Input Terminal  
Pin No. Assignment

Pin No.	Assignment
1	ACL
2	ACN
3	⏏

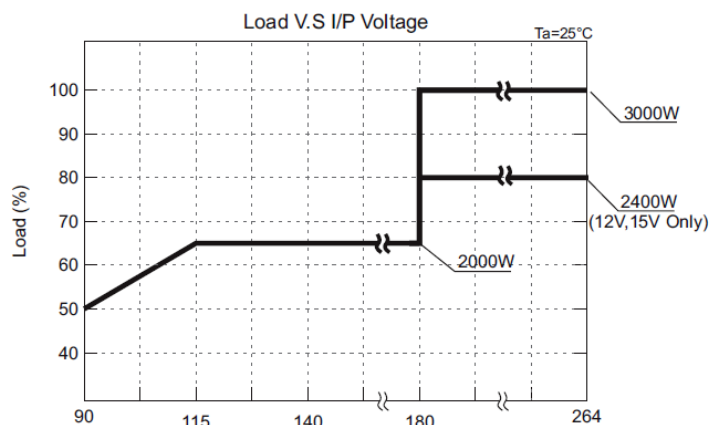
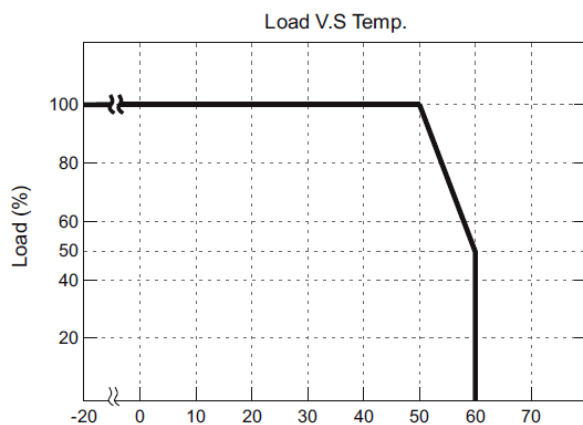
Mating Housing / Contact

JST PHDR-24VS or equivalent	JST SPHD-002T-P0.5 or equivalent
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Pin No.	Assignment	Pin No.	Assignment	Pin No.	Assignment
1	VS+	9	EN-	17	AUX
2	VO+	10	GND	18	GND
3	VS-	11	EN+	19	SCL
4	VO-	12	AUX	20	SDA
5	POK	13	ACI	21	AUX
6	GND	14	GND	22	GND
7	PAR	15	VCI	23	NC.
8	VSET	16	GND	24	NC.









## Derating Curves



## LED Signals

Local mode: Use ACI/VCI control output current and voltage.

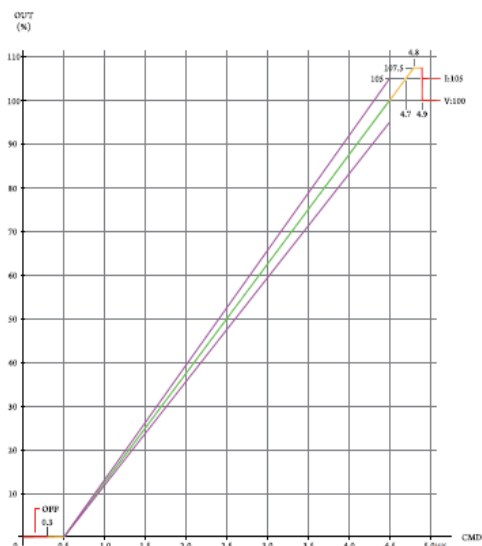
Remote mode: Use RS-232 or I<sup>2</sup>C command control output current and voltage.

LED	LED Signal	Status
Solid(Green)		Power OK (Local mode)
Solid(Orange)		Power OK (Remote mode)
Slow Blink(Green)		Power Standby
Fast Blink(Red)		Over Voltage Protection ( OVP )
Solid(Red)		Over Load Protection ( OLP )
Slow Blink(Red)		Over Temperature Protection ( OTP )
Intermittent Blink(Red)		Fan Failure
Interface Blink(Red)		Power Failure

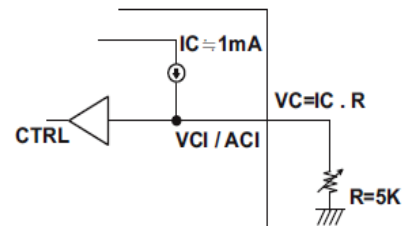
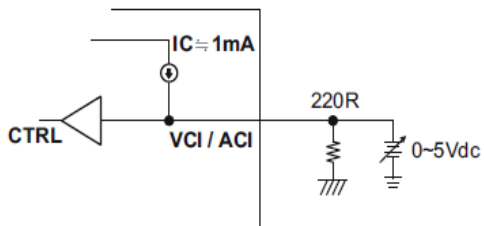
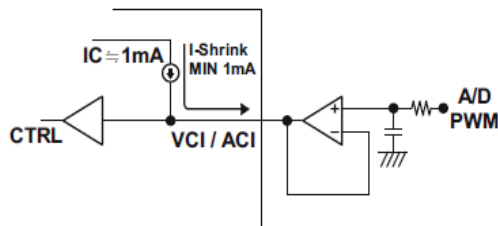
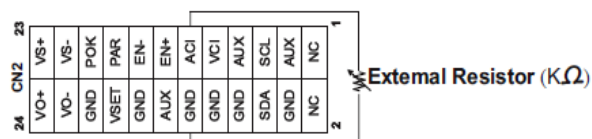
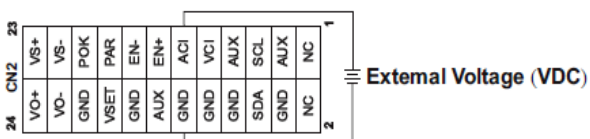
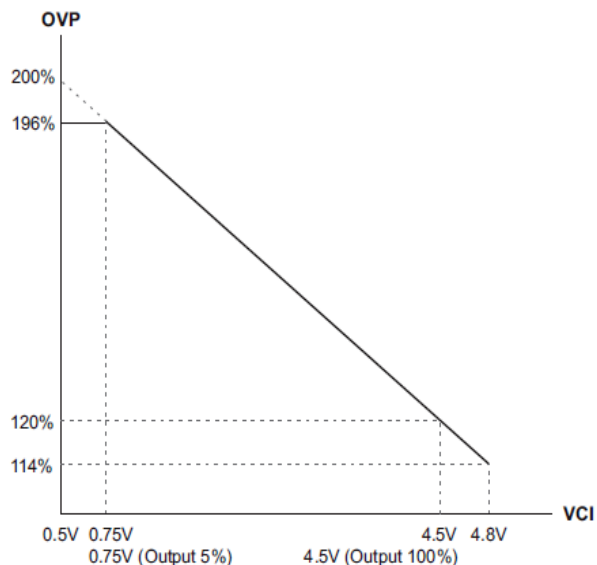


## Current & Voltage Programming Details

### CMD vs Output

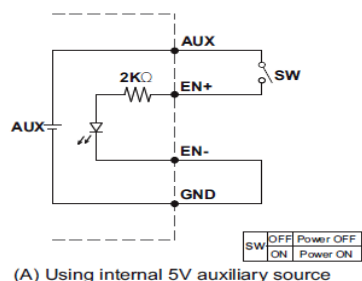


### VCI vs Output

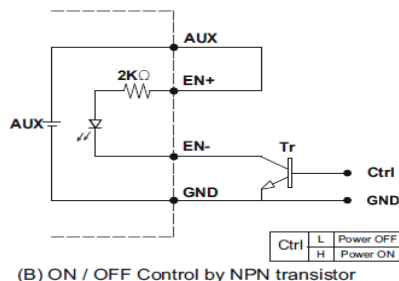


## Remote On/Off Options

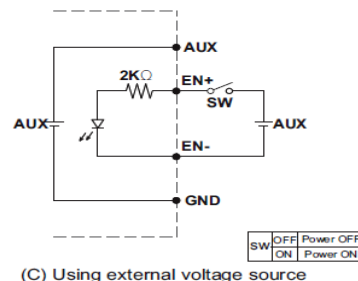
### (A) Default Setting



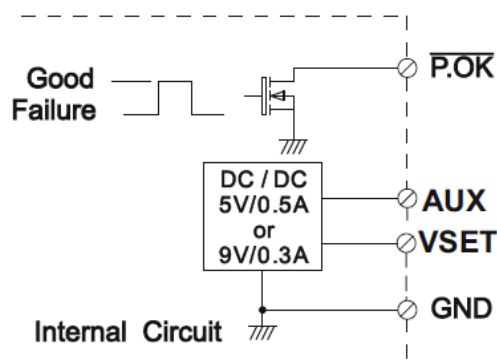
### (B) ON / OFF Control by NPN transistor



### (C) Using external voltage source



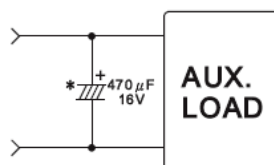
## Power OK Signal & Aux. Output Configuration



\*Place an additional capacitor to have a better performance of auxiliary power operation.

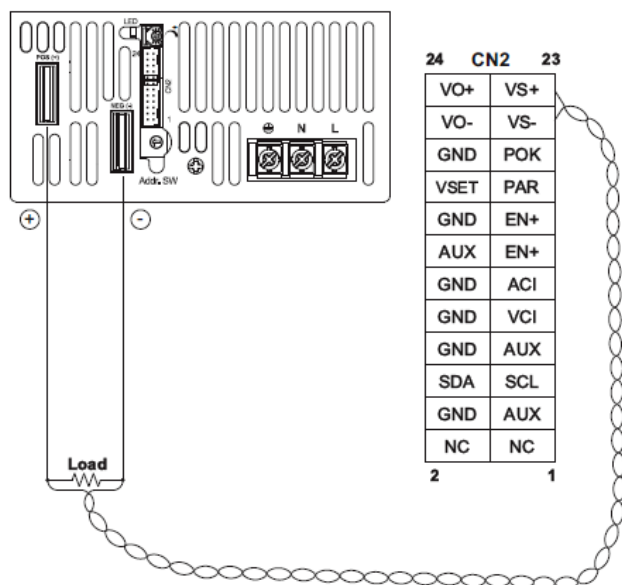
\*The grounding of "AUX" power should be connected to "GND" port. If "V-" is connected as Grounding, make sure to short the GND and V- ports.

VSET	Open(Default Setting)	5V
	Short To GND	9V

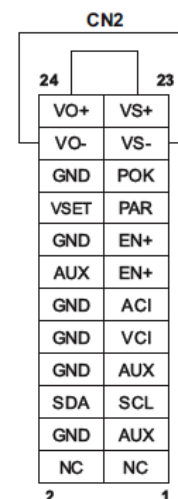
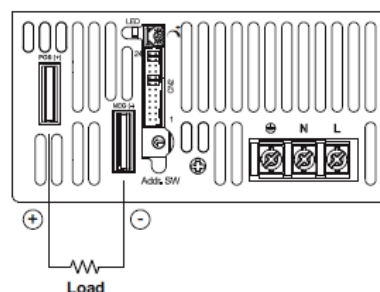


## Remote Sense Options

### 1. Remote Sense

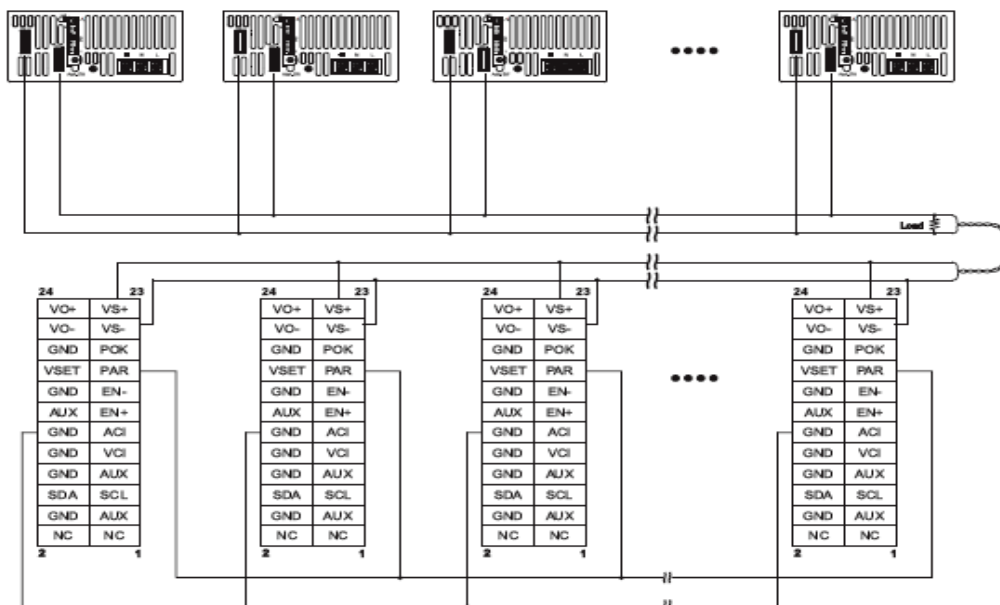


### 2. Local Sense (Default setting)

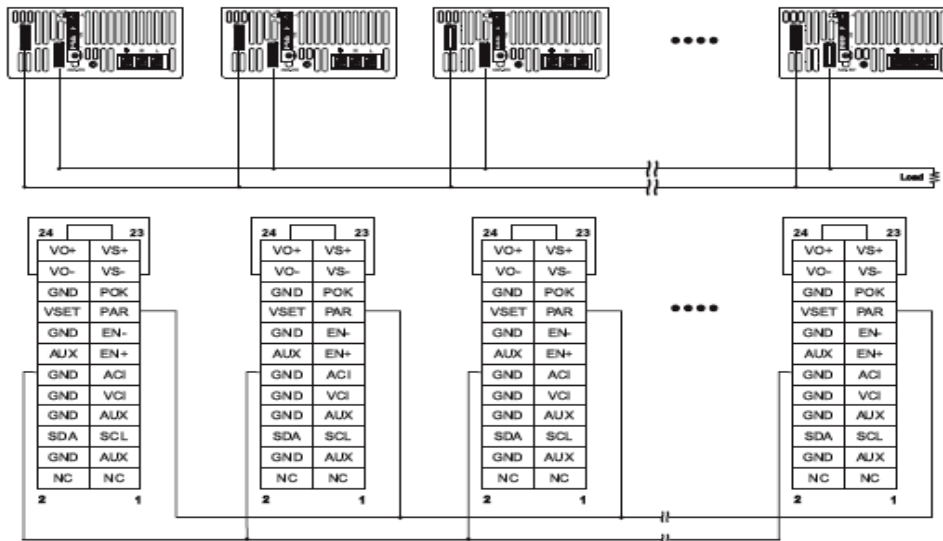


## Current Sharing Options

### Current Sharing with Remote Sensing



### Current Sharing with Local Sensing



### Notes

1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature.
2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uF & 47uF parallel capacitor.
3. Tolerance: includes setup time tolerance, line regulation and load regulation.
4. In parallel connection only one unit will operate if the total output load is less than 5% of the rated power.
5. This test is done without enclosure.

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