

RSP-2400 Series

2400W Single Output Power Supply



Case No: 8017HM
278 x 177 x 63.5 mm

Features

- AC input active surge current limiting
- High efficiency up to 91%
- Built-in active PFC function, PF>0.95
- Protections: Short Circuit/Overload/Over voltage/Over temperature/Fan alarm
- Forced air cooling by built-in DC fan with speed control
- Output voltage can be trimmed between 20~110%
- High power density 12.5W/inch³
- Current sharing up to 3 units
- Alarm signal output (relay contact and TTL signal)
- Built-in 12V/0.1A auxillary output for remote control
- Built-in remote ON-OFF control
- Built-in remote sense function



Specification

INPUT	Voltage	180V ~ 264VAC universal full range or 254V ~ 370VDC		
	Frequency	47 ----- 63 Hz		
	Current	<15.5A@180VAC; 12A@230VAC input, full load		
	Inrush Current	<60A@230VAC input, Cold start at 25°C ambient		
	Leakage Current	<2.0mA@240VAC input		
OUTPUT	MODEL No.	RSP-2400-12	RSP-2400-24	RSP-2400-48
	Voltage	12V	24V	48V
	Min Load	0A	0A	0A
	Max Load	166.7A	100A	50A
	Output Tolerance	± 1%	± 1%	± 1%
	Line Regulation	± 0.5%	± 0.5%	± 0.5%
	Load Regulation	± 0.5%	± 0.5%	± 0.5%
	Ripple Noise MAX.	150mV	150mV	200mV
	Efficiency (TYP.)	87%	90%	91.5%
	Power	2000.4W	2400W	2400W
PROTECTION	Over Voltage	13.8~16.8V	28.8~33.6V	57.6~67.2V
		Shutdown and latch off, re-power on to recover		
	Over Temperature	95°C ±5°C (12V), 100°C ±5°C (24V,48V) (TSW1: detect on heatsink of power transistor)		
		95°C ±5°C (12V), 85°C ±5°C (24V), 80°C±5°C (48V) (TSW2: detect on heatsink of o/p diode)		
		Protection type: Shut down o/p voltage, recovers automatically after temperature goes down		
ELEC. CHAR.	Over Load & Short Circuit	100~112% rated output power; User adjustable continuous constant current limiting or constant current limiting with delay shutdown after 5 seconds, re-power on to recover		
	Rise Time	<80mS@ full load		
	Hold up Time	>12mS@ full load		
	Setup Time	<1 Sec@ full load		
ENVIRONMENT	Temperature	Operating: -20 ~ +70°C ; Storage: -40~ +85°C		
	Humidity	Operating: 20% ~ 90% RH; Storage: 10% ~ 95% RH (non condensing)		
SAFETY	Withstand Voltage	I/P-O/P:3KVAC, I/P-FG:1.5KVAC, O/P-FG:0.5KVAC, 1minute		
	Isolation Resistance	I/P-O/P, I/P-FG, O/P-FG 100MΩ/500VDC		
	Safety Standard	UL60950-1; TUV EN60950-1 Approved		
EMC	EMI	EN55022; EN61000-3-2,3		
	EMS	EN61000-4-2,3,4,5,6,8,11; EN55024		
OTHERS	Cooling	Forced air cooling by built-in DC fan with speed control function		
	M.T.B.F.	106.7K hrs min. MIL-HDBK-217F (25°C)		
	Packing	3.3Kg; 4 pcs/14.2Kg/1.89 CUFT		

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.

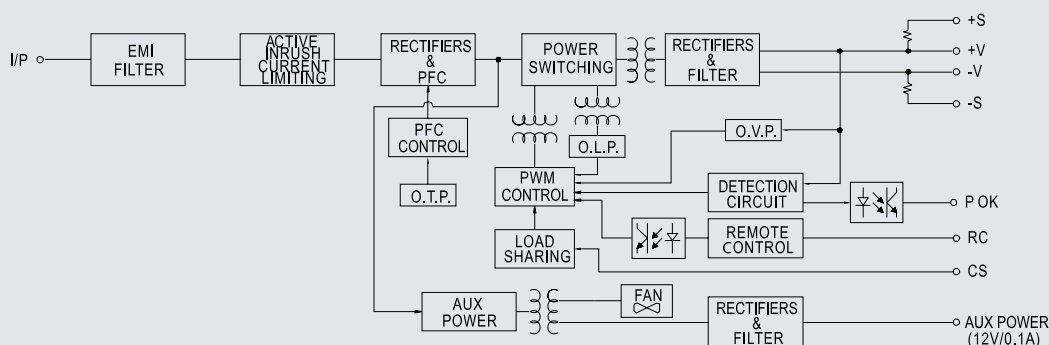
3 Tolerance : includes set up tolerance, line regulation and load regulation.

4 The power supply is considered a component which will be installed into a final equipment. The final equipment mustbe re-confirmed that it still meets EMC directives.

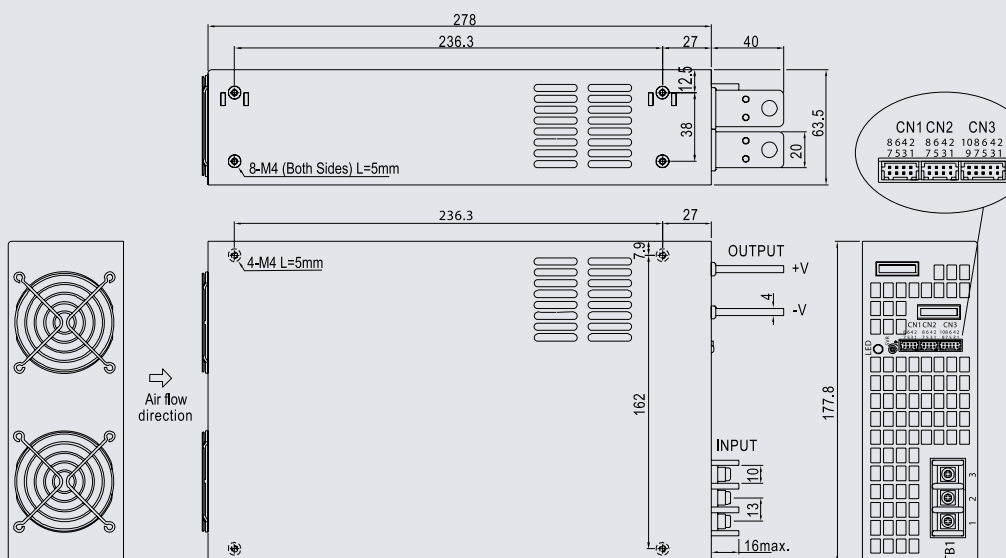
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Block Diagram



Dimensions



AC Input Terminal Pin. No Assignment:

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

Control Pin No. Assignment (CN1, CN2): HRS DF11-8DP-2DS equivalent

Pin No.	Assignment	Pin No.	Assignment	Mating House	Terminal
1	RCG	5,7	-S	HRS DF11-8DS or equivalent	HRS DF11-SC or equivalent
2	RC	6	CS (Current Share)	HRS DF11-8DS or equivalent	HRS DF11-SC or equivalent
3	PV	8	+S	HRS DF11-8DS or equivalent	HRS DF11-SC or equivalent
4	PS			HRS DF11-8DS or equivalent	HRS DF11-SC or equivalent
RCG: Remote ON/OFF Ground		RC: Remote ON/OFF		PV: Output Voltage External Control	
		-S: -Remote Sensing		PS: Reference Voltage Terminal	
				CS: Load Share	
				+S: + Remote Sensing	

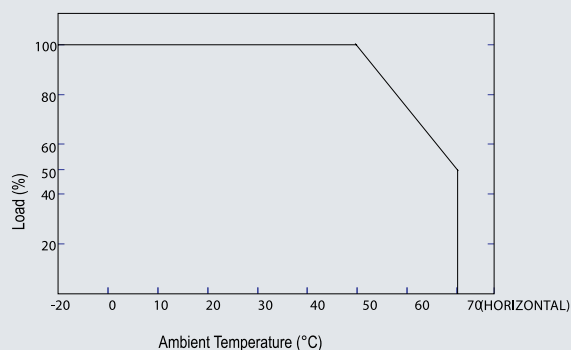
Control Pin No. Assignment (CN3): HRS DF11-6DP-2DS equivalent

Pin No.	Assignment	Pin No.	Assignment	Pin No.	Assignment	Mating House	Terminal
1	P OK GND	5	RCG	9	OLP	HRS DF11-10DS or equivalent	HRS DF11-SC or equivalent
2	P OK	6	RC	10	OL-SD	HRS DF11-10DS or equivalent	HRS DF11-SC or equivalent
3	P OK GND2	7	AUXG			HRS DF11-10DS or equivalent	HRS DF11-SC or equivalent
4	P OK2	8	AUX			HRS DF11-10DS or equivalent	HRS DF11-SC or equivalent
P OK GND: Power OK Ground		P OK: Power OK Signal (Relay Contact)		P OK2: Power OK Signal (TTL Signal)		RCG: Remote ON/OFF Ground	
		AUXG: Auxillary Ground		AUX: Auxiliary Output		OLP: OLP mode select	
				OL-SD: OLP mode select		RC: Remote ON/OFF	

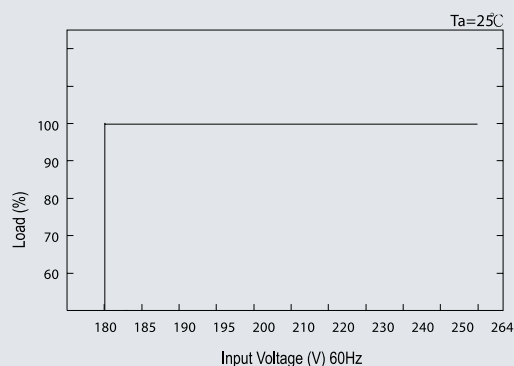
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De-Rating Curve



Static Characteristics



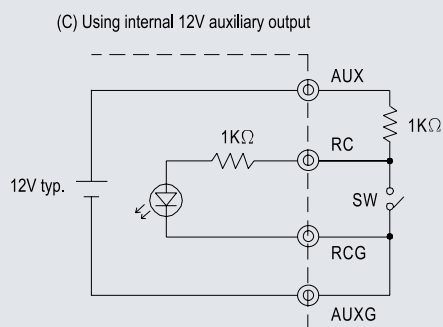
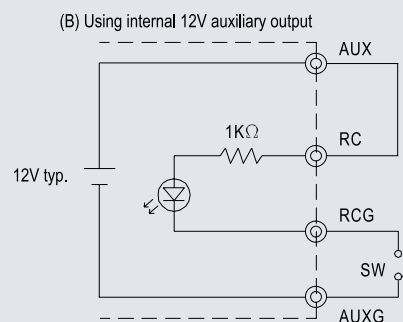
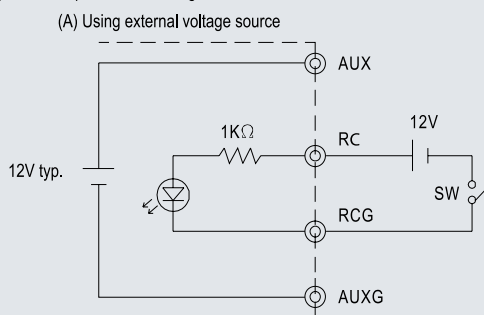
Function Manual

1. Remote ON/OFF

- (1) Remote ON/OFF control becomes available by applying voltage in CN1, CN2 & CN3
- (2) The table below shows the specification of remote ON/OFF function
- (3) Fig 1.2 shows an example to connect remote ON/OFF control function

Connection Method	Fig. 1.2(A)	Fig. 1.2 (B)	Fig. 1.2(C)
SW Logic	Output ON	SW Open	SW Close
	Output OFF	SW Close	SW Open

Fig. 1.2 Examples of connecting remote ON/OFF



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2. Alarm Signal Output

- (1) Alarm signal is sent out through "P OK" & "P OK GND" and P OK & P OK GND2 pins
- (2) An external voltage source is require for this function
- (3) The table below explains the alarm function built-in the power supply

Function	Description	Output of alarm(P OK, Relay Contact)	Output of alarm(P OK2, TTL Signal)
P OK	The signal is "Low" when the power supply is above 80% of the rated output voltage-Power OK	Low (0.5V max at 500mA)	Low (0.5V max at 10mA)
	The signal turns to be "High" when the power supply is under 80% of the rated output voltage-Power Fail	High or open (External applied voltage, 500mA max.)	High or open (External applied voltage, 10mA max.)

Table 2.1 Explanation of alarm

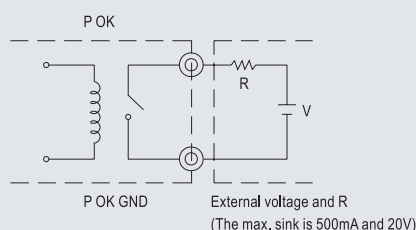


Fig. 2.2 Internal circuit of P OK (Relay, total is 10W)

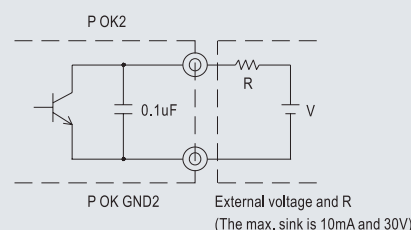


Fig. 2.3 Internal circuit of P OK2 (Open collector method)

3. Output Voltage TRIM

- (1) Connecting an external DC source between PV and -S on CN1 or CN2 that is shown in Fig. 3.1
- (2) Adjustment of output voltage is possible between 20~110% (Typ.) of the rated output which is shown in Fig. 3.2. Reducing output current is required when the output voltage is trimmed up

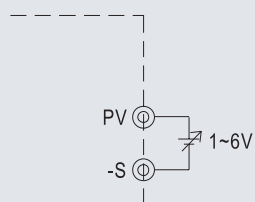


Fig. 3.1 Add on 1~6V external voltage

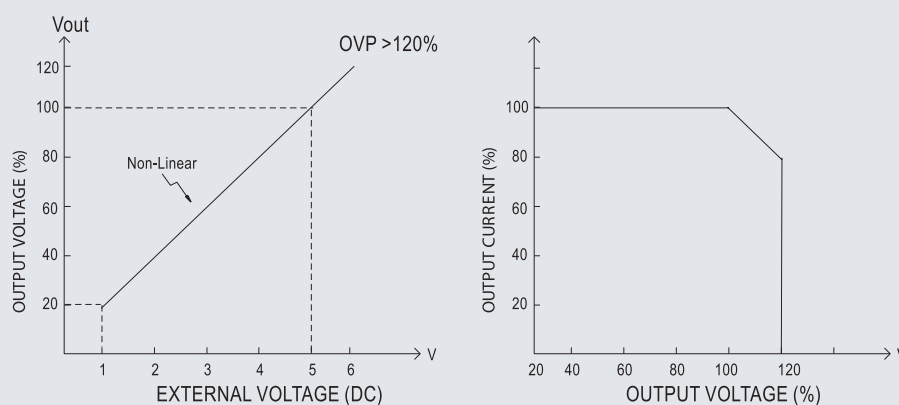


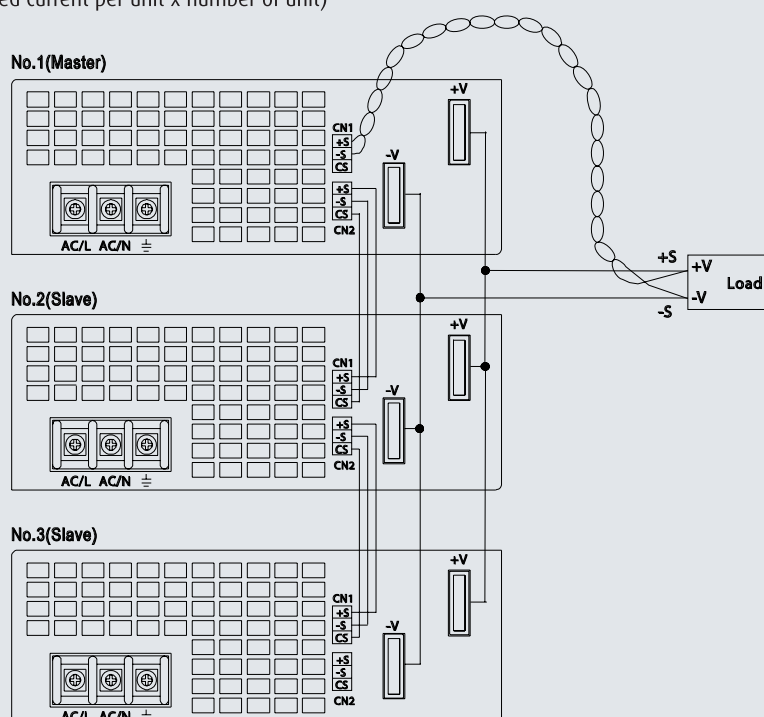
Fig. 3.2 Output voltage trimming

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4. Current Sharing

- (1) Parallel operation is available by connecting the units shown as below
(+S, -S and CS are connected mutually in parallel)
- (2) The voltage difference among each output should be minimized that less than $\pm 2\%$ is required
- (3) The total output current must not exceed the value determined by the following equation
(output current at parallel operation) = (The rated current per unit) x (Number of unit) x 0.9
- (4) In parallel operation 3 units is the maximum, please consult the manufacturer for other applications
- (5) When remote sensing is used in parallel operation, the sending wire must be connected only to the master unit
- (6) Wires of remote sensing should be kept at least 10cm from input wires
- (7) Under parallel operation, the "output voltage trim" function is not available
- (8) When in parallel operation, the minimum output load should be greater than 2%
of total output load (Min. load > 2% rated current per unit x number of unit)



5. Select O.L.P mode

- (1) Remove the shorting connector on CN3 that is shown in Fig. 5.1, the O.L.P mode will be "continuous constant current limiting"
- (2) Insert the shorting connector on CN3 that is shown in Fig. 5.2, the O.L.P mode will be "constant current limiting with delay shutdown after 5 seconds, re-power on to recover"

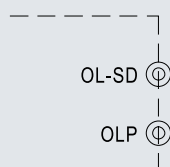


Fig. 5.1 Remove the CN3
OLP Mode: Constant current limiting

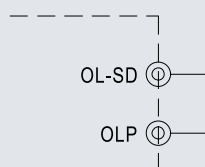


Fig 5.2 Insert the CN3
OLP Mode: Constant current limiting with delay shutdown after 5 seconds

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6. Three Phase Connect

Fig. A:3 ϕ 3W 220VAC System (Standard model for stock)

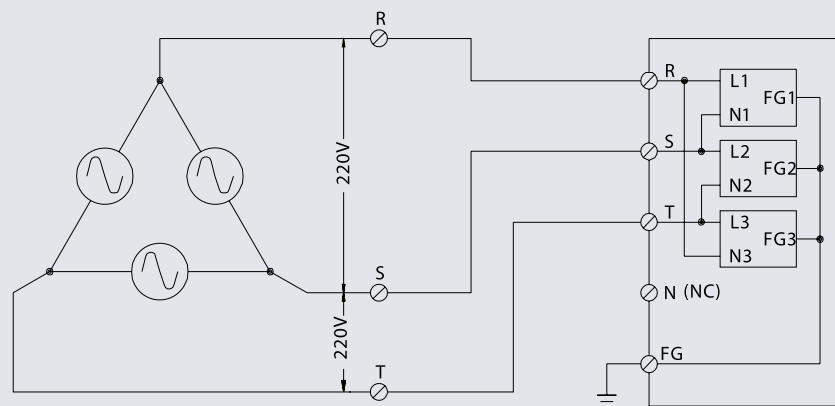


Fig. B:3 ϕ 4W 220/380VAC System

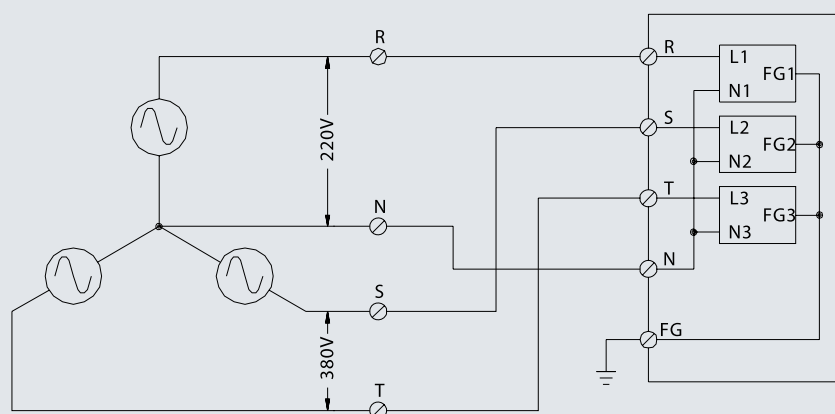


Fig. C:3 ϕ 4W 190/110VAC System

