Astrodyne

1000W Single Output Power Supply

RSP1000 series

- Universal AC input
- Protections:Short circuit/Over load/Over voltage/Over temperature
- Built-in active PFC function, PF>0.95
- Forced air cooling by built-in DC fan
- Built-in remote sense function
- Built-in remote ON-OFF control
- 1 U low profile of 41mm
- AC input active surge current limiting
- DC OK Signal
- Output voltage can be trimmed between 40~110% of the rated output voltage
- High power density 10.7W/cubic inch
- Active Current sharing up to 4000W (3+1)
- Built-in 5 Volt/0.5 Amp auxiliary power

Model Number	Output Volts	Output Amps	OVP	Min Load	DC Volt Adjust	Efficiency
SINGLE OUTPUT						
RSP1000-12	12 Volts(DC)	60 Amps	13.8 ~ 16.8Volt(DC)	0~60 Amps	10~13.5Volt(DC)	83%
RSP1000-15	15 Volts(DC)	50 Amps	17 ~ 20.5Volt(DC)	0~50 Amps	13.5~16.5Volt(DC)	85%
RSP1000-24	24 Volts(DC)	40 Amps	27.6 ~ 32.4Volt(DC)	0~40 Amps	20~26.4Volt(DC)	88%
RSP1000-27	27 Volts(DC)	37 Amps	31 ~ 36.5Volt(DC)	0~37 Amps	24~30Volt(DC)	88%
RSP1000-48	48 Volts(DC)	21 Amps	56.6~ 66.2Volt(DC)	0~21 Amps	43~55Volt(DC)	90%

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INPUT SPECIFICATIONS

Input Voltage Range (Note 3)	90 ~ 264VAC 127~370 Volts(DC)
Frequency Range	47-63 Hz
Inrush Current, typ: (cold start)	25Amps/115VAC; 40Amps 230VAC
Input Current	12 Amps/115V; 6.0 Amps/230V
Leakage current	< 2.0 mAmps / 240VAC
Min Load	See Selection Chart
Power Factor @ FL	0.95 / 230V; 0.98 / 115V

OUTPUT SPECIFICATIONS

Voltage and Current	See Selection Chart
Line / Load Regulation	±0.5%
Voltage Tolerance (Note 2)	±1.0%
Ripple/Noise (Note 1)	150mVpk-pk
Hold Up Time @ FL	16mS / 230VAC
Setup, Rise Time @ FL	300mS, 50mS
Over Voltage Protection	See Selection Chart
	Shutdown o/p volage, re-power
Over Current Protection	105~125% rated output power
	Constant current limit,auto recover
Over Temperature Protection	85°C ±5°C (TSW2) detected
	on heatsink of O/P diode;
	75°C ±5°C (TSW1) detected
	on heatsink of power transistor
DC Volt Adjust	See Selection Chart

ENVIRONMENTAL SPECIFICATIONS

Oper. Temperature	-20°C to +60°C (See Derate Curve)
Storage Temperature	-40°C to +85°C, 10~95% RH
Operating Humidity	20~90% RH non cond
Temperature Coefficient	±0.02% / °C (0-50°C)
MTBF	35KHrs min,MIL-HDBK-217F(25°C)
Vibration	10~500Hz, 2G10min./1cycle, period for
	60min. each along X, Y, Z axes

All specifications are typical at nominal input, full load, and 25°C unless otherwise noted

PHYSICAL SPECIFICATIONS

Size	295 x127 x 41mm (11.61"x5 "x1.61")
Weight	68.78 oz (1950g)

GENERAL SPECIFICATIONS

Safety	UL60950-1, TUV EN60950-1
Insulation Resistance	100MΩ / 500Volts(DC)
EMI (Note 4)	Compliance to EN55022 (CISPR22)
Harmonic Current	Compliance to EN61000-3-2,-3
Efficiency	See Selection Chart
Isolation	3000VAC Input - Output
	1500VAC Input - Ground
	500VAC Output - Ground
EMS (Note 4)	Compliance to
	EN61000-4-2,3,4,5,6,8,11
	ENV50204, EN55024, EN61000-6-2
	EN61204-3 light Industry Level,
	Criteria A
Auxiliary power(Aux)	5 Volts @ 0.5 Amps (+5%, -8%)
Remote ON/OFF	Please see the Function Manual
Dc OK Signal	Please see the Function Manual
Output Voltage Trim	40-110%; Please see Function Manual
Current Sharing	Please see the Function Manual

NOTE

1. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor.
2. Tolerance : includes set up tolerance, line reg and load reg.
3. Derating may be needed under low input voltages. Please check the derating curve for more details.
4. The Power Supply is considered a component. The final equipment should be retested for EMC Directive compliance.

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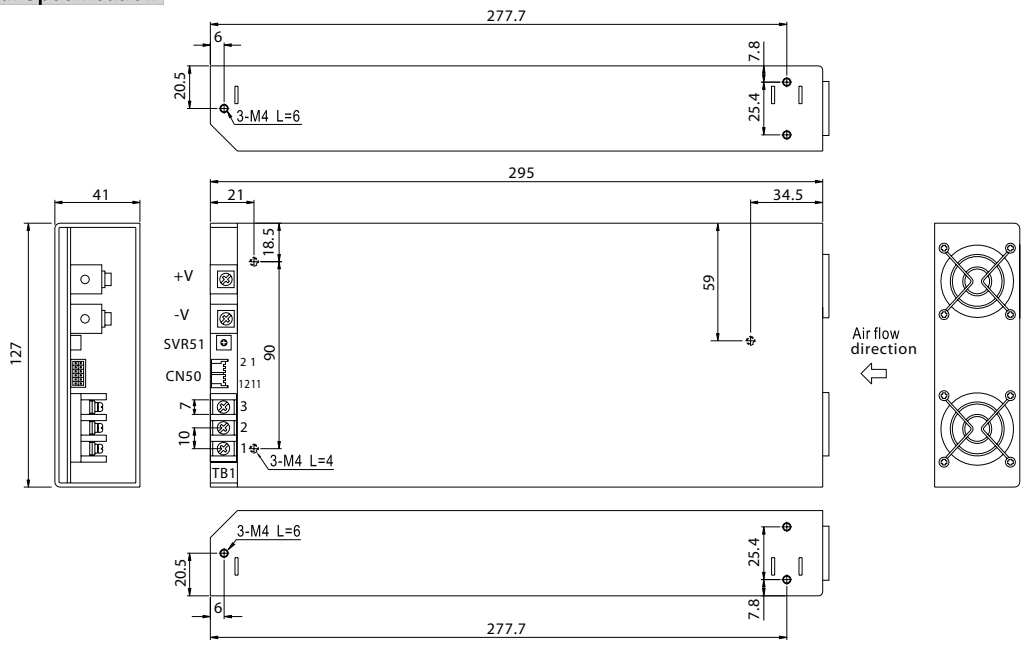
■ Mechanical Specification



AC Input Terminal Pin No. Assignment

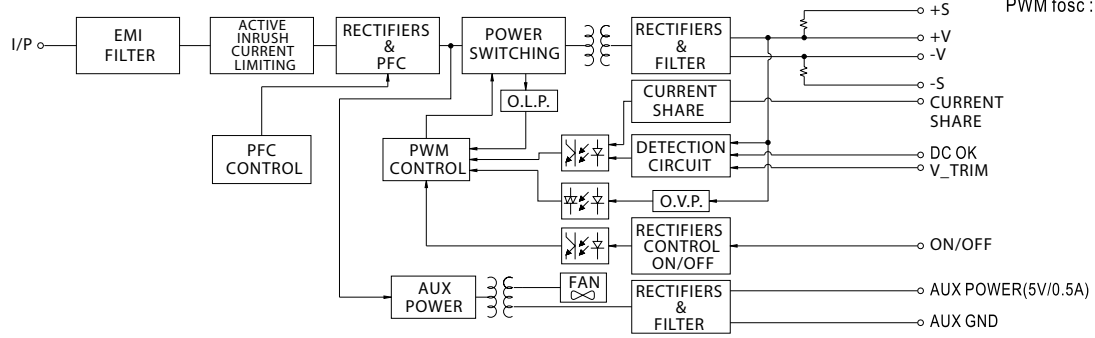
Pin No.	Assignment
1	AC/N
2	AC/L
3	FG ⏚

Control Pin No. Assignment (CN50) : HRS DF11-12DP-2DS or equivalent

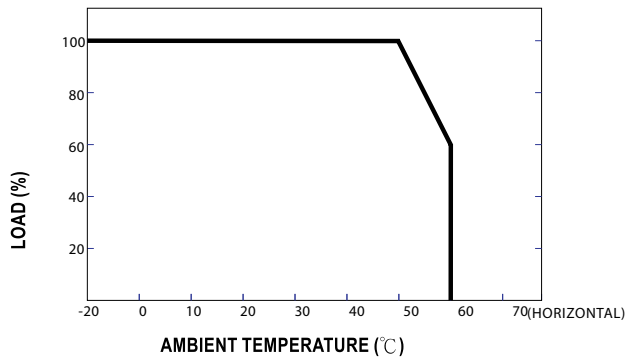
Pin No.	Assignment	Pin No.	Assignment	Pin No.	Assignment	Mating Housing	Terminal
1	+S	5	DC-OK	9	Vci	HRS DF11-12DS or equivalent	HRS DF11-**SC or equivalent
2	-S	6	ON/OFF	10	Vca		
3	G-AUX	7	CS	11,12	GND		
4	5V-AUX	8	Vco				

■ Block Diagram

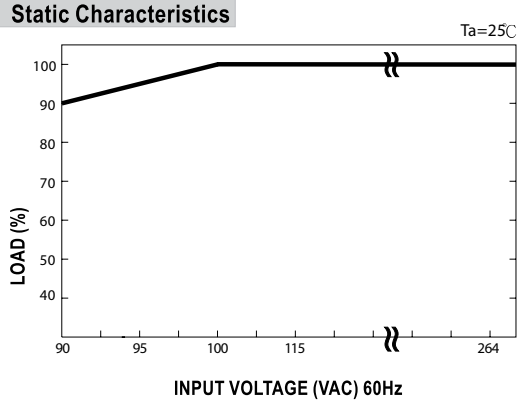
PFC fosc : 110KHz
PWM fosc : 90KHz



■ Derating Curve



■ Static Characteristics



■ Function Description of CN50

Pin No.	Function	Description
1	+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.
2	-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.
3	G-AUX	Auxiliary voltage output ground. The signal return is isolated from the output terminals (+V & -V).
4	5V-AUX	Auxiliary voltage output, 4.6~5.25V, referenced to pin 3(G-AUX). The maximum load current is 0.5A. This output has the built-in oring diodes and is not controlled by the "remote ON/OFF control".
5	DC_OK	Open collector signal, referenced to pin11,12(GND). Low when PSU turns on. The maximum sink current is 10mA and the maximum external voltage is 5.6V.
6	ON/OFF	Turns the output on and off by electrical or dry contact between pin 6 (ON/OFF) and pin 2 (-S). Short: Power ON, Open: Power OFF.
7	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.
8	Vco	Short connecting between Vco (pin8) and Vca (pin10) if output voltage trim function is not used.
9	Vci	Connect to external DC voltage source for output voltage triming, referenced to pin 2 (-S). Output voltage can be trimmed between 40 ~ 110% of the rated output voltage.
10	Vca	Connect to external resistor (1/8W) for output voltage triming. Output voltage can be trimmed between 40 ~ 110% of the rated output voltage. Please refer to function manual for details.
11,12	GND	These pins connect to the negative terminal (-V). Return for DC_OK Signal output.

■ Function Manual

1."Remote ON/OFF" and "Output voltage trim" functions are not used.

The power supply unit will have no output if the shorting connector (accessory comes along with the PSU) is not assembled. It contains two shorting wires : one is from ON/OFF (pin6) to -S (pin2) and the other is from Vco (pin8) to Vca (pin10).

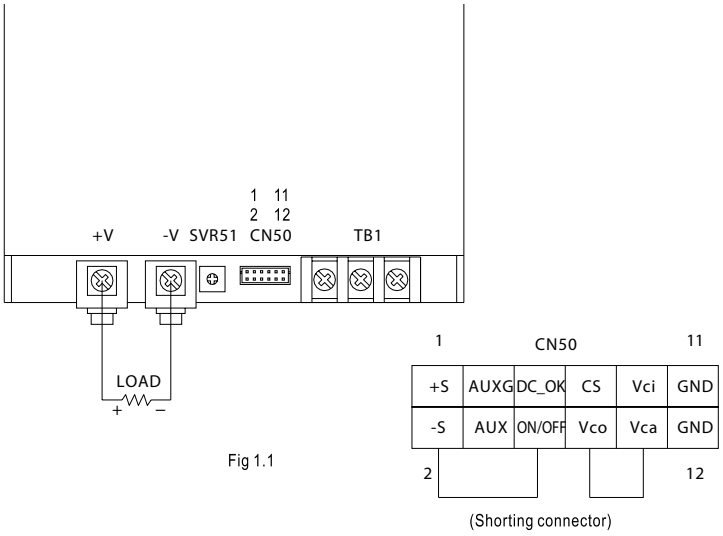


Fig 1.1

2.Remote ON/OFF

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

Between ON/OFF(pin6) and -S(pin2)	Output Status
SW ON (Short)	ON
SW OFF (Open)	OFF

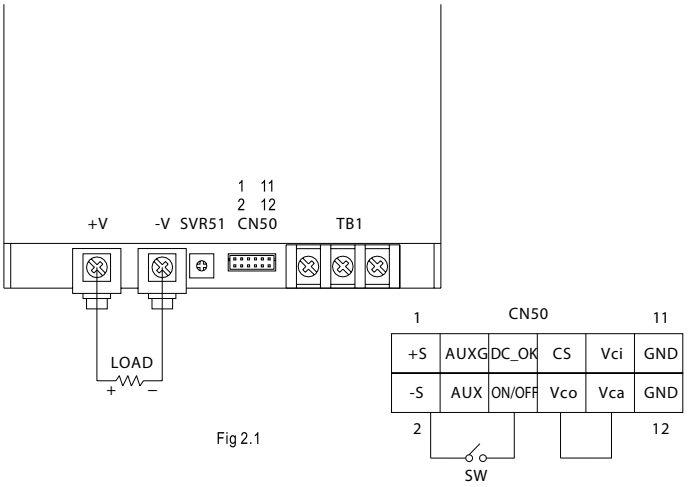


Fig 2.1

3.DC_OK signal

"DC_OK" is an open collector signal.

It indicates the output status of the PSU. It can operate in two ways : One is sinking current from external TTL signal ; the other is sending out a TTL voltage signal.

3-1 Sink current :

The maximum sink current is 10mA and the maximum external voltage is 5.6V.

3-2 TTL voltage signal :

Between DC- OK(pin5) and GND(pin11&12)	Output Status
0 ~ 1V	ON
3.3 ~ 5.6V	OFF

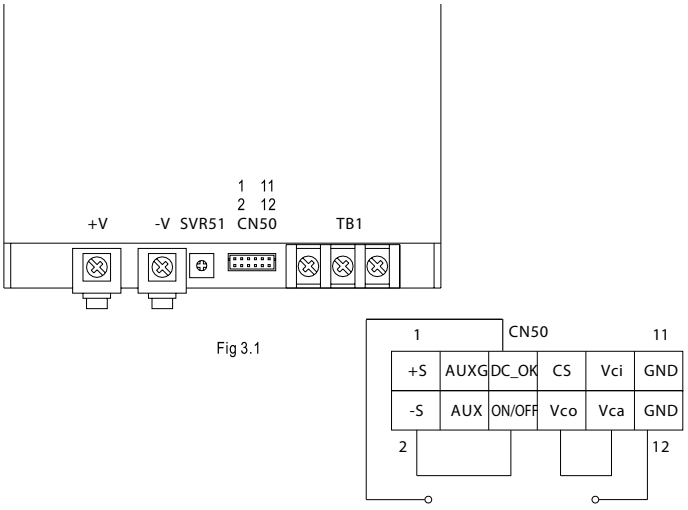


Fig 3.1

4.Remote Sense

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

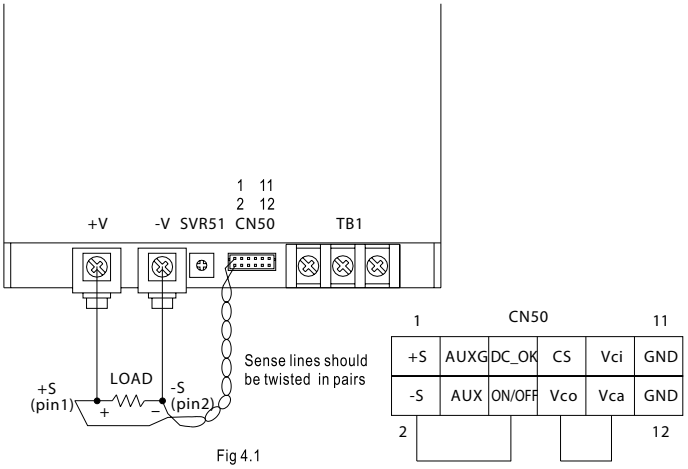
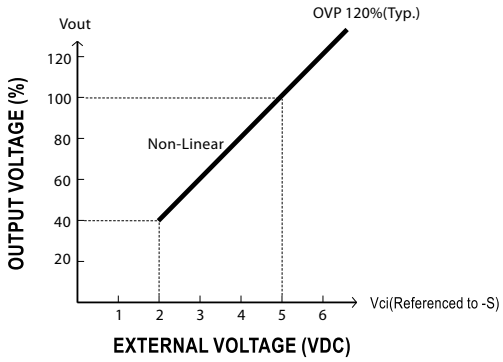


Fig 4.1

5.Output Voltage TRIM

Output voltage of RSP1000 can be trimmed between 40% ~ 110% of its rated value by the following methods :

(1)Using external voltage source between "Vci"(pin9) and "-S"(pin2) that is shown in Fig5.1



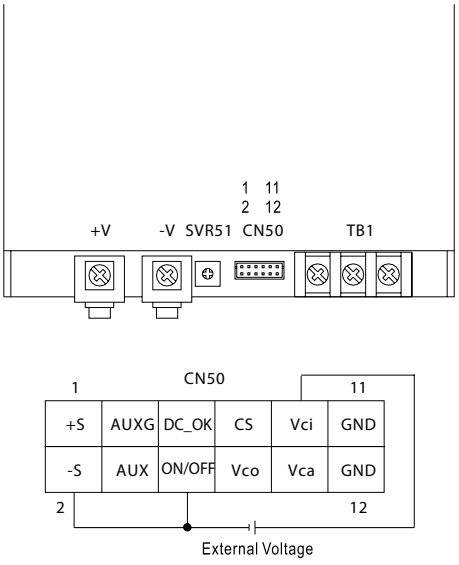
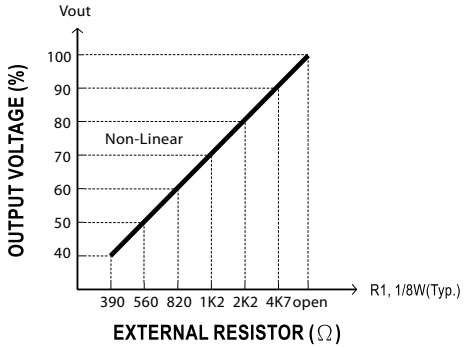


Fig 5.1

(2)Connecting a resistor externally that in shown in Fig 5.2 & Fig 5.3

(A) O/P voltage goes down



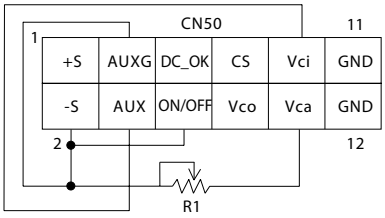
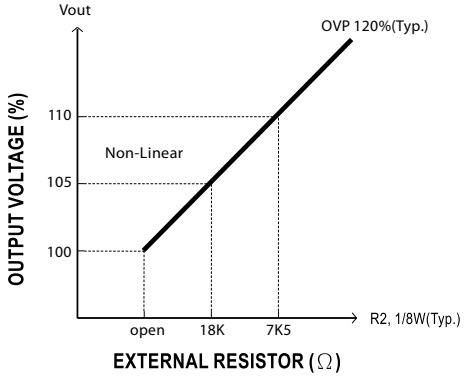


Fig 5.2

(B)O/P voltage goes up



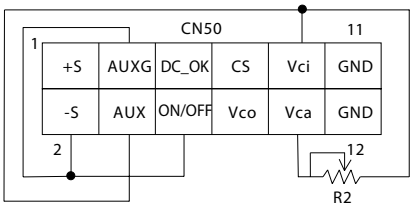


Fig 5.3

6.Current Sharing with Remote Sensing

RSP1000 has the built-in active current sharing function and can be connected in parallel to provide higher output power :

(1)Parallel operation is available by connecting the units shown as below.
(+S,-S and CS are connected mutually in parallel).

(2)Difference of output voltages among parallel units should be less than 2%.

(3)The total output current must not exceed the value determined by the following equation.
(output current at parallel operation)=(Rated current per unit)x(Number of unit)x0.9

(4)In parallel operation 4 units is the maximum, please consult the manufacturer for applications of more connecting in parallel.

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

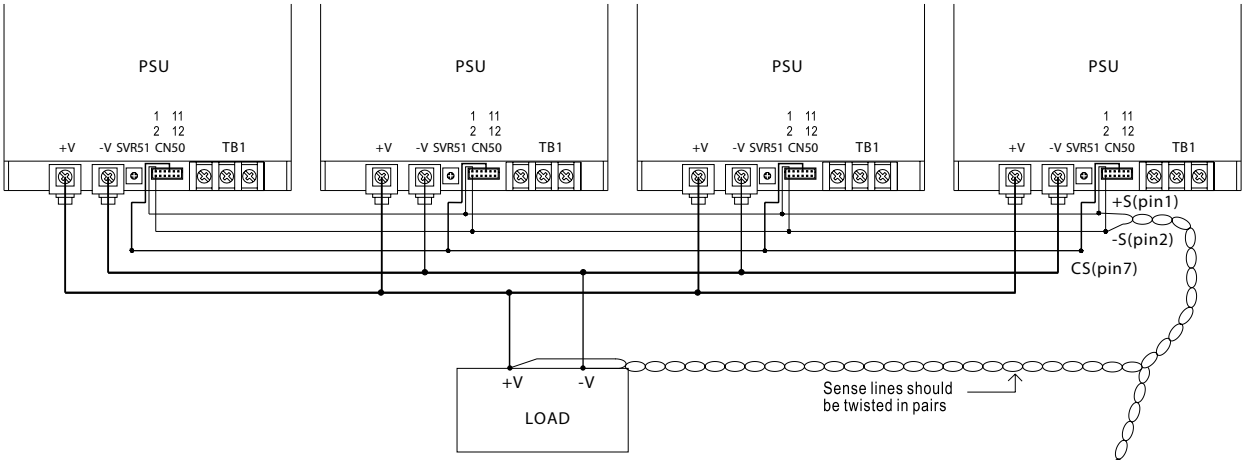
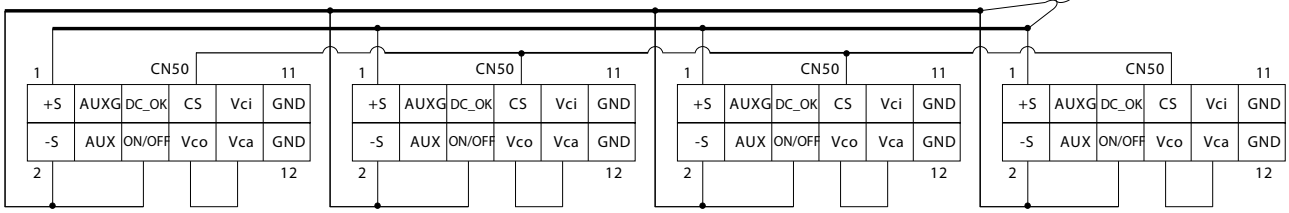


Fig 6.1



Note : In parallel connection, maybe only one unit (master) operate if the total output load is less than 5% of rated load condition.
The other PSUs (slaves) may go into standby mode and their output LEDs will not turn on.