

SMPS-12

Eclipse Use Switching Power Supply

SERVICE MANUAL

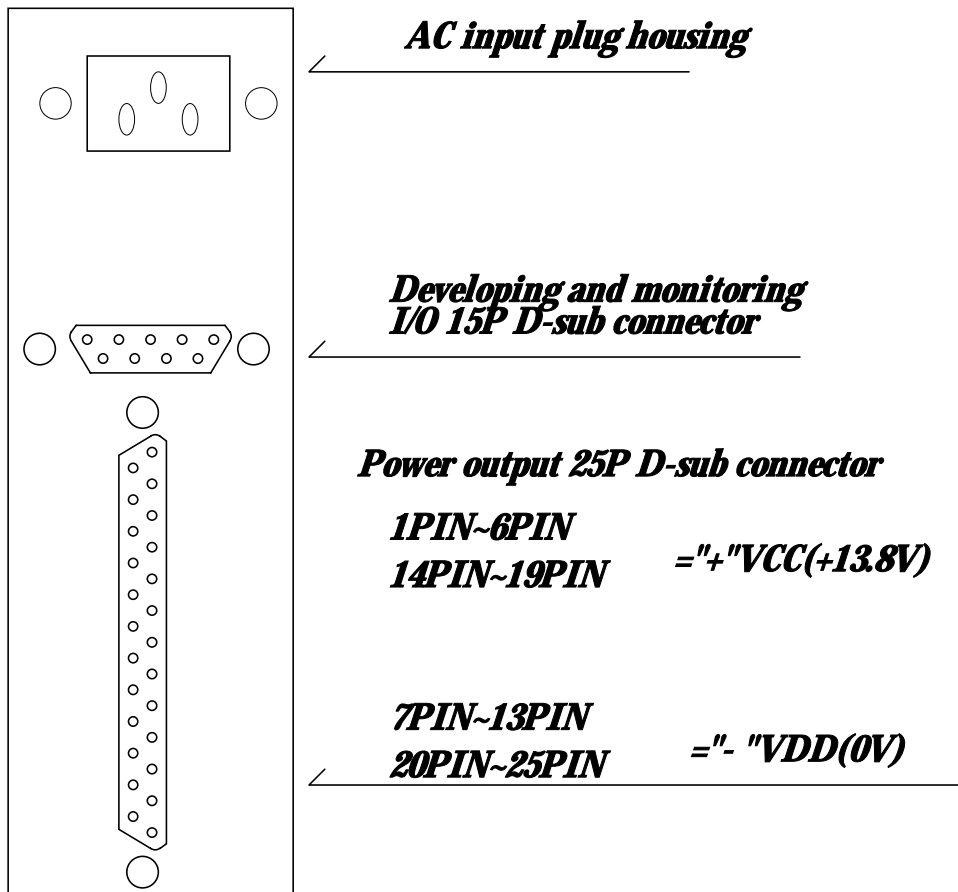
V2.00

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1. This Switching mode Power supply is special design and use in professional RF equipments. It provided an excellent efficiency and reliability only in very small 4 U space to high power output. It also providing an I/O interface to user to develop and monitoring feature.
2. SMPS-12 can use 110V and 220V AC power for input, the AC Voltage switch is in the top of the power supply sub-rack. Before plug in please check the voltage position is correct or not otherwise may take a permanent damage in this power supply. If the output inquiry of power supply will more than 20 Amp. We strongly recommend to use 220V input to prevent overloading in AC power input.
3. The FAN control circuit will making self-test when the power is turn "ON". The LED in front panel will change to orange color from green color and FAN starting to run, if LED flash in red color and alarm beep coming out this is show out the fail of FAN and need to be check.
4. The states of LED in front panel :
 - I. Green color : when power supply turn ON and in normal running.
 - II. Orange color : when power supply turn ON and FAN starting self-test.
 - III. Flash red color : FAN fail in running.
5. The FAN will automatically running when the system temperature higher then 50°C, and will beep alarm if FAN fail.
6. When output of power supply is fail, please check the AC input and output circuit first. If the fuse burn out that means must has some serious damage inside of circuit, because of the wrong operation or AC input. The circuit has a very good protection design usually will not damage in normal operation.
7. Output power in 13.8 Volts can be from 0 Amp. up to 35 Amp. within the environments temperature 0°C to 60°C. If the continuously output current may more than 25 Amp. and up, beware the environments temperature should not higher than 40°C.
8. The input Voltage should between 95V/AC ~ 130V/AC (115V/AC)
and 190V/AC ~ 260V/AC (230V/AC)
9. The 25 pin D-sub for power output should keep contact clean otherwise may cause connector burn out.

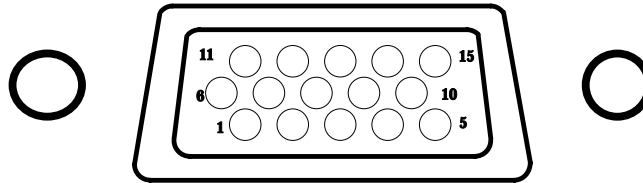
SMPS-12(V2.00) Rear Panel Description



Developing and Monitoring

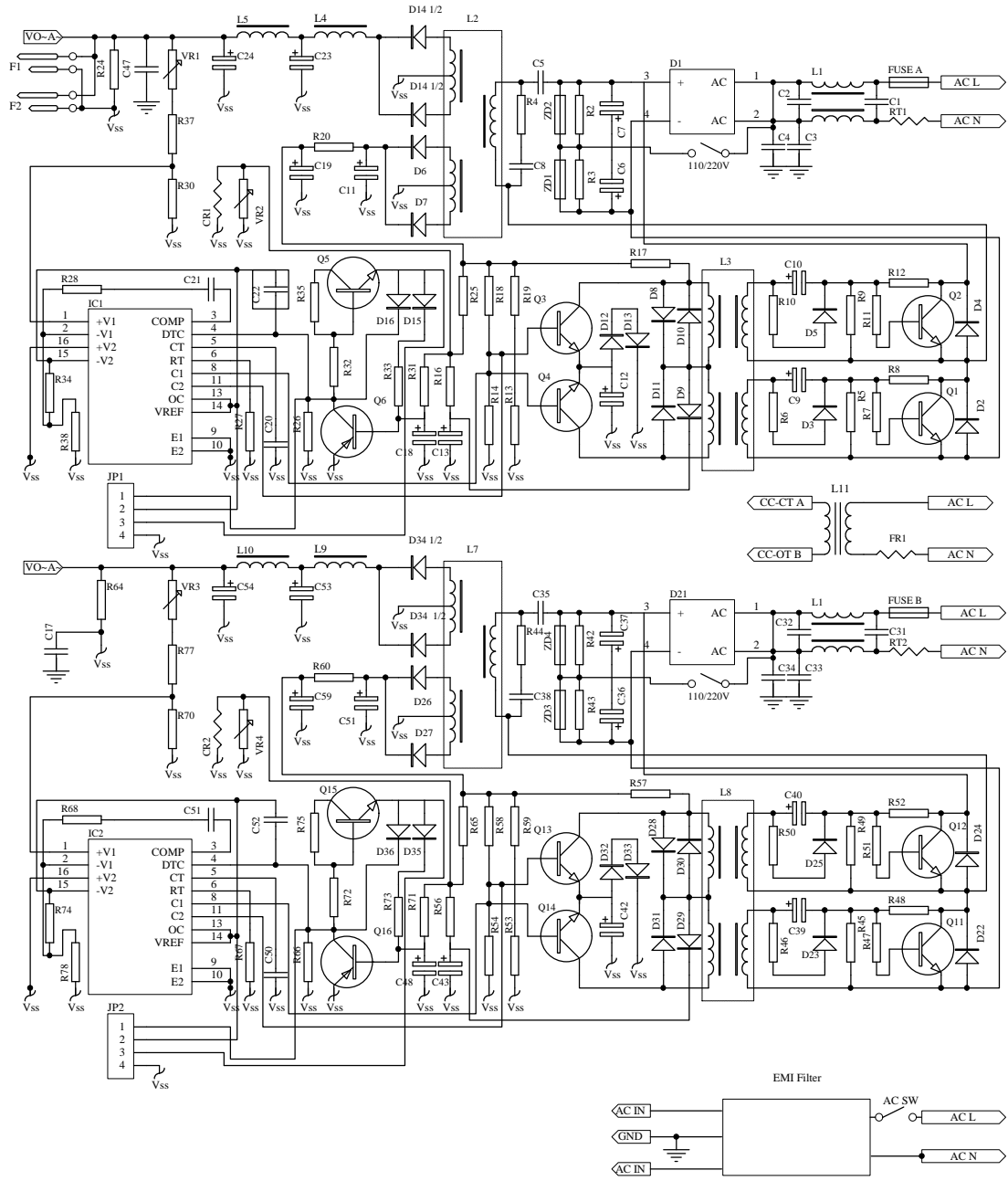
SMPS -12 - 28 (V2.00)

15P I/O D-sub connector

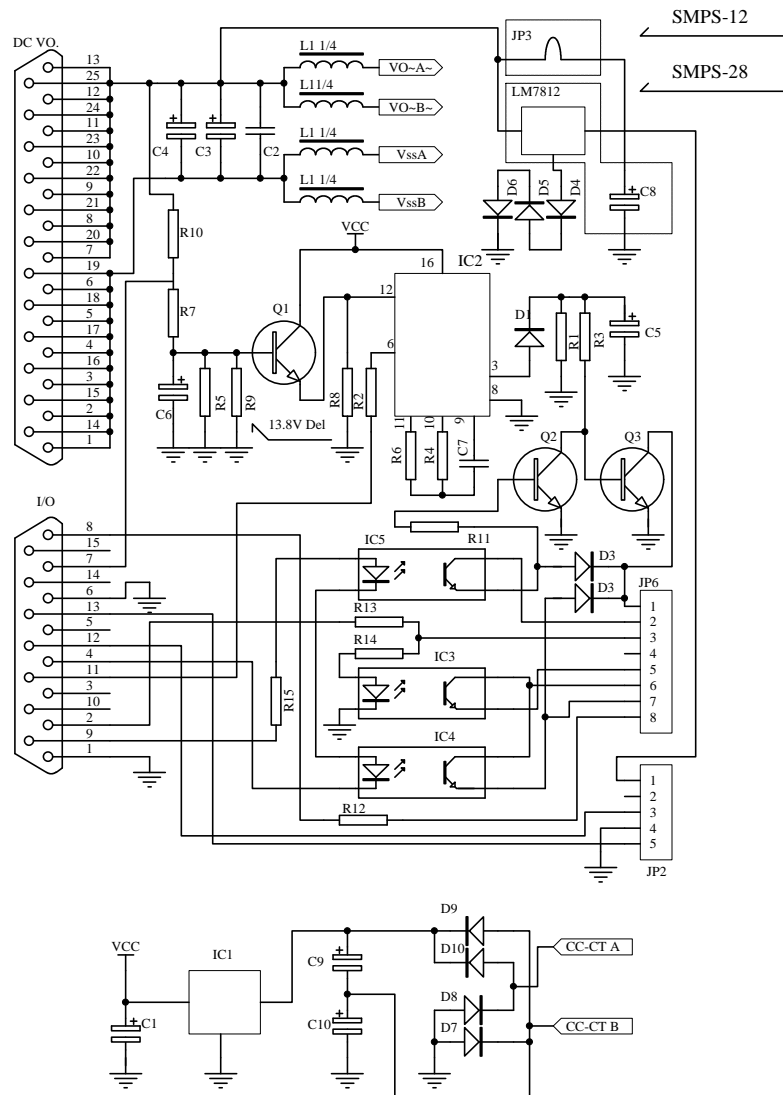


Number	Decription	
1	GND	Secondary
2	N.C	
3	N.C	
4	Power OFF Control Input	+5V
5	N.C	
6	GND	Secondary
7	O.P.P Test	to GND
8	1/2 Output Voltage	
9	Over Load Output	+5V(5mA)
10	Power OFF Control Input	COM
11	O.P.P O.S.C Vo	about 0.45S
12	TEMP. Monitoring Linear Output	
13	FAN Fail Alarm +12V	
14	N.C	
15	N.C	

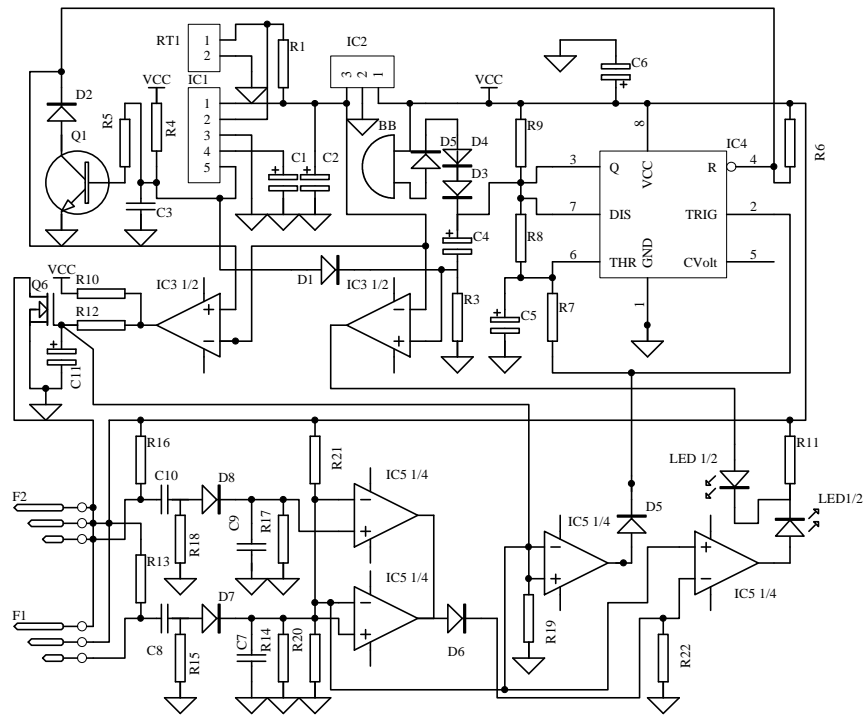
SMPS-12 & SMPS-28(V2.00) Power Main



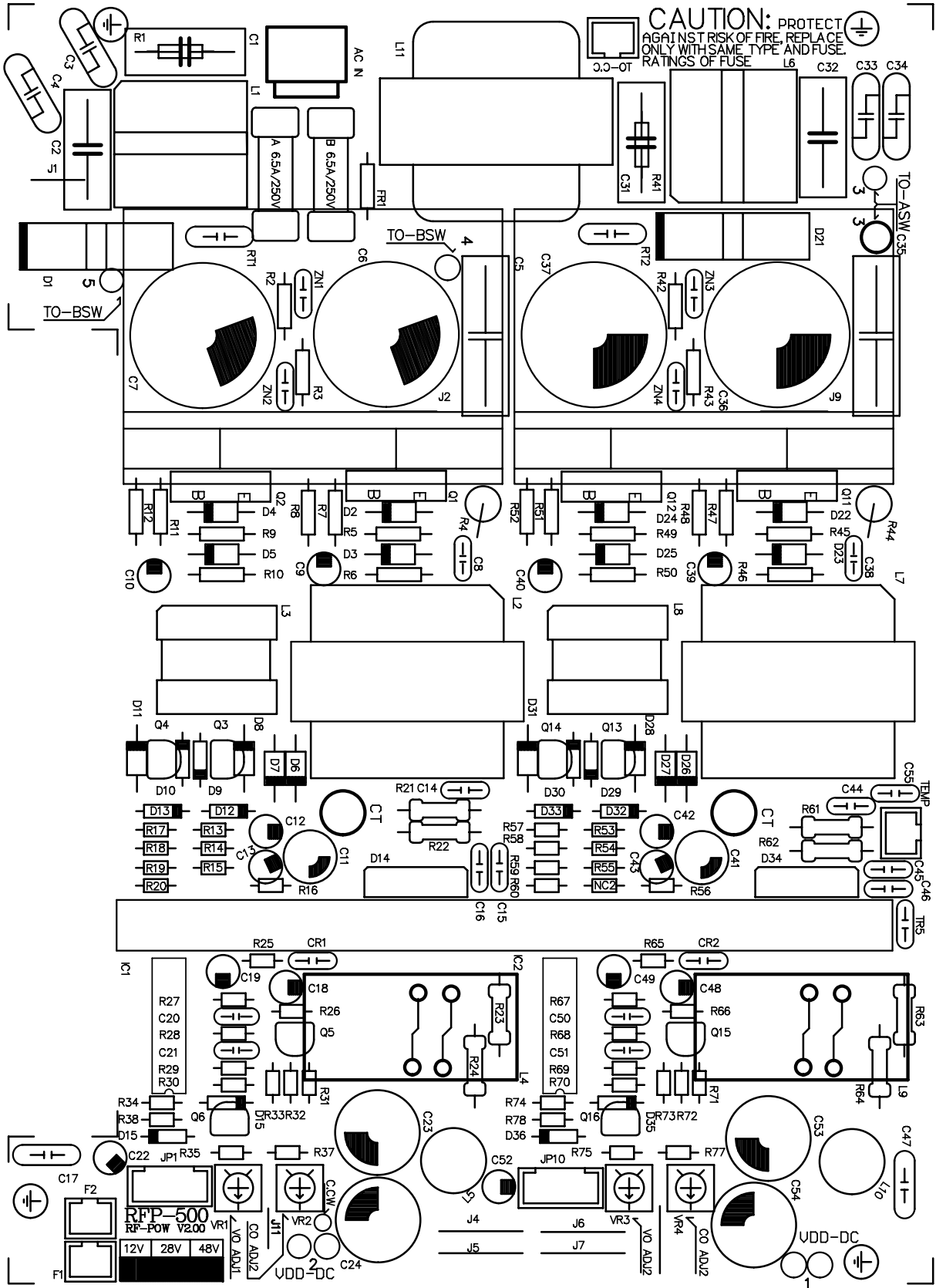
SMPS-12 & SMPS-28(V2.00) I/O & Filter



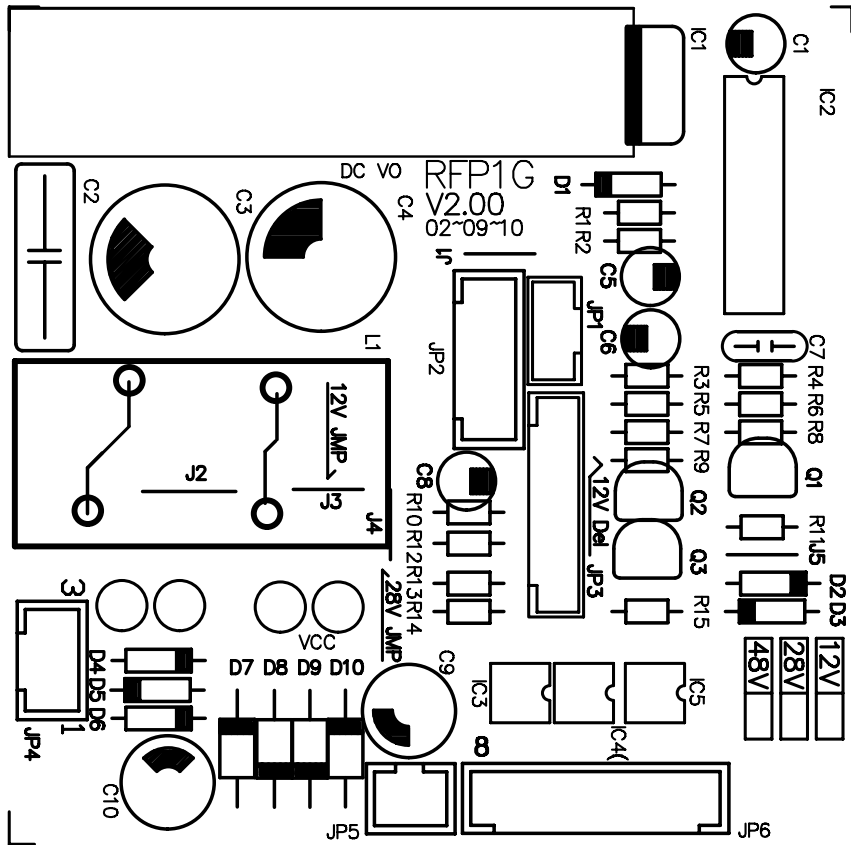
FAN CONTROL



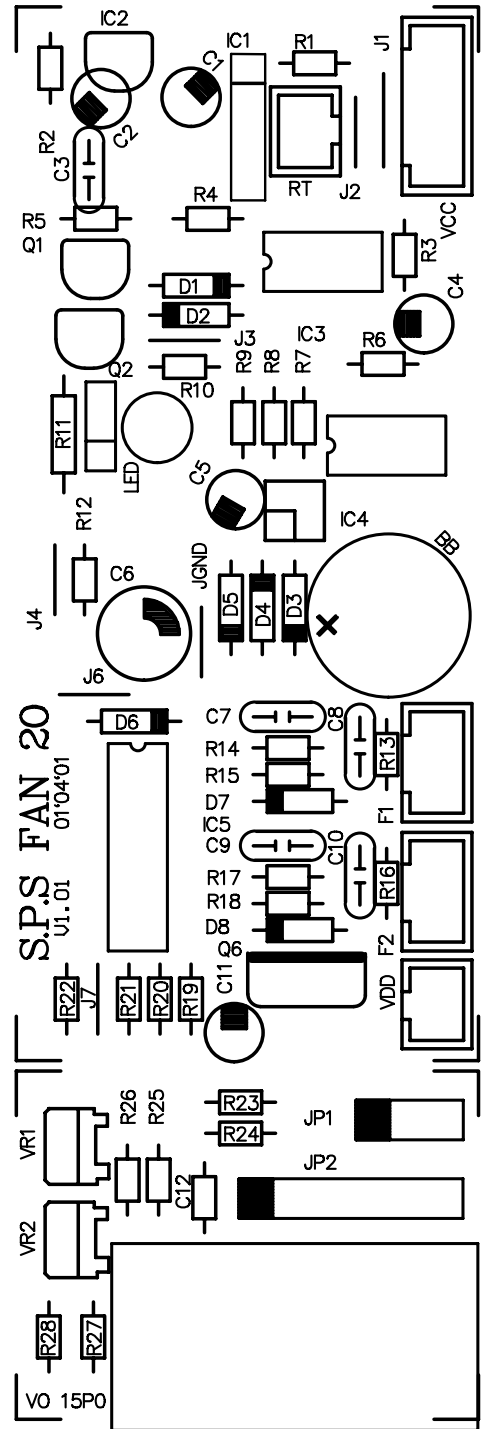
Power Main PCB



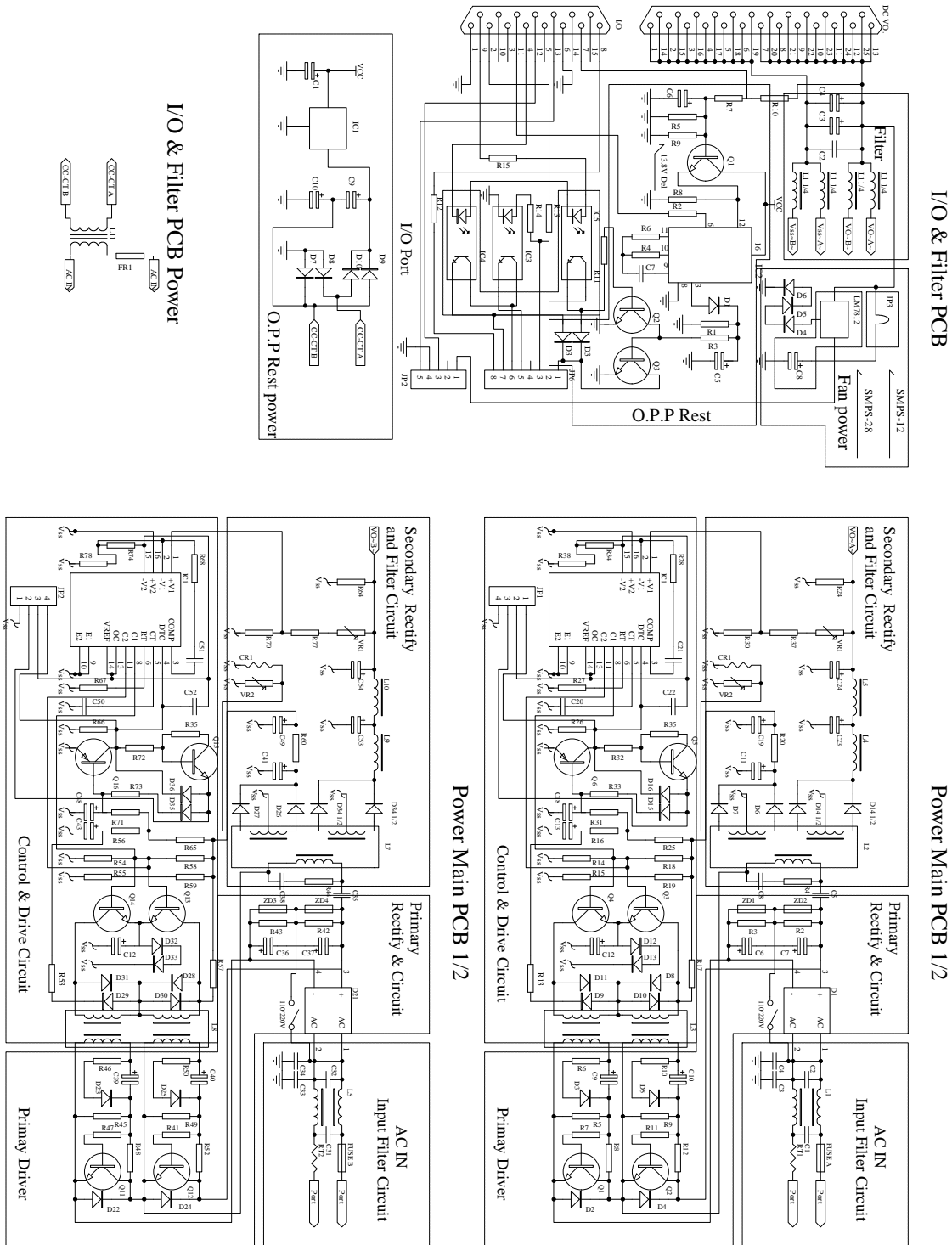
I/O & Filter PCB



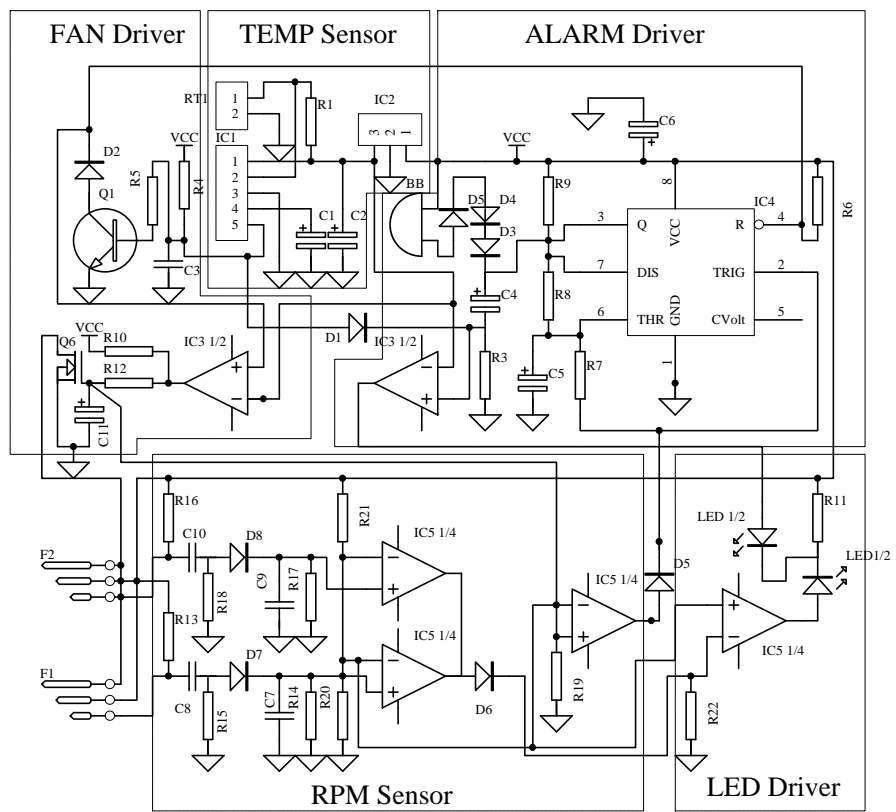
FAN Control



SMPS-12 & SMPS-28 (V2.00) Power supply circuit



FAN CONTROL



Specification

1. Input Voltage : 115V/AC or 230V/AC
2. Start-up Input Voltage :
 - a : 105 ~ 125V *At Full Load
 - b : 210 ~ 260V *At Full Load
3. Input Frequency : 50Hz ~ 60Hz
4. Input Current : 10A/110V or 5.5A/220V (Max.)
5. Efficiency [@]Full Load : Vin = 110V/AC 75% and up
Vin = 220V/AC 78% and up
6. Output Voltage : 13.8 Volt \pm 0.4V at Full Load
7. Output Current :
 - a. 35 Amp. current output continuously in 25°C environment temperature.
 - b. 30 Amp. current output continuously in 35°C environment temperature.
 - c. 25 Amp. current output continuously in 40°C environment temperature.
8. Ripple & Noise : 50mV ~ 100mV (Vp-p) at full Load.
9. Protection : Continuously Short (38A up) Protection Circuit with automatically recover feature.
10. Line Isolation : up to 1.2KV
11. Cooling FAN : 50mm x 15mm 4600 rpm viper bearing
12. EMI Filtering : Twofold EMI Filter installed
13. Output Filtering : Input Isolation RF EMI Filter.
14. Outline Dimension : 4U standard (302mm/L x 174mm/H x 62mm/W)
15. Weight : 2.7Kg

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Bill of Material

Power Main PCB(V2.00)

ITEM	PART	PART NAME	DESCRIPTION	REMARKS
1	RFP500/01/01	2SC2625P	TRANSISTOR	RFP500-Q1,Q2,Q11,Q12
2	RFP500/01/02	2SC1815/2SC945	TRANSISTOR	RFP500-Q3,Q4,Q5,13,14,15
3	RFP500/01/03	2SA733/2SA1015	TRANSISTOR	RFP500-Q6, 16
4	RFP500/02/01	MBR4045PT	SCHOTTKY DIODE	RFP500-D14,D34
5	RFP500/02/02	PBU407	BRIDGE DIODE	RFP500-D1,D21
6	RFP500/02/03	FR107	DIODE	RFP500-D2,4,22,24
7	RFP500/02/04	FR102	DIODE	RFP500-D3,5,6,7,8,11,23,25,26,27,28,31
8	RFP500/02/05	1N4148	DIODE	RFP500-D9-16,D29-36
9	RFP500/03/01	TL494/AK7500	IC	RFP500-IC1,IC2
10	RFP500/04/01	221V/50A	Z.N.R	RFP500-ZN1,ZN2,ZN3,ZN4
11	RFP500/05/01	152/100V/65V	FILM CAP	RFP500-C20, C50
12	RFP500/05/02	223/100V/65V	FILM CAP	RFP500-C21, C51
13	RFP500/06/01	102/1KV	CAP	RFP500-C8, C38
14	RFP500/06/02	472 275V/400VAC	CAP	RFP500-C3,4,33,34
15	RFP500/06/03	103/50V	CAP	RFP500-C14,15,16,44,45,46,55
16	RFP500/06/04	103/1KV	CAP	RFP500-C17, C47
17	RFP500/07/01	105/250V	FILM CAP	RFP500-C5, C35
18	RFP500/07/02	104/275VAC	FILM CAP	RFP500-C1, C2, C31, C32
19	RFP500/08/01	470uF/200V	ELECTROLYTIC CAP	RFP500-C6, C7, C36, C37
20	RFP500/08/02	2200uF/16V	ELECTROLYTIC CAP	RFP500-C23,24,53,54
21	RFP500/08/03	22uF/50V	ELECTROLYTIC CAP	RFP500-C11, C41
22	RFP500/08/04	4.7uF/50V	ELECTROLYTIC CAP	RFP500-C18,19,22,48,49,52
23	RFP500/08/05	1uF/50V	ELECTROLYTIC CAP	RFP500-C9,10,12,39,40,42
24	RFP500/08/06	2.2uF/50V	ELECTROLYTIC CAP	RFP500-C13, C43
25	RFP500/09/01	6 /8A	THERMISTOR	RFP500-RT1,RT2
26	RFP500/09/02	TDC05C310	THERMISTOR	RFP500-RT5,CR1,CR2
27	RFP500/10/01	100 2W	RESISTORS	RFP500-R4, R44
28	RFP500/10/02	100 1WS	RESISTORS	RFP500-R24, R64
29	RFP500/10/03	4.7 1/2Ws	RESISTORS	RFP500-RF1
30	RFP500/10/04	330K 1/2Ws	RESISTORS	RFP500-R12,8,48,52
31	RFP500/10/05	150K 1/2Ws	RESISTORS	RFP500-R2,3,42,43
32	RFP500/10/06	2.2 1/2Ws	RESISTORS	RFP500-R7,11,47,51
33	RFP500/10/07	4.7 1/2Ws	RESISTORS	RFP500-R21,22,23,61,62,63
34	RFP500/10/08	1M 1/2Ws	RESISTORS	RFP500-R1, R41
35	RFP500/10/09	2.7K 1/2Ws	RESISTORS	RFP500-R5,9,45,49
36	RFP500/10/10	27 1/2Ws	RESISTORS	RFP500-R6, R10, R46, R50
37	RFP500/10/11	1K 1/8W	RESISTORS	RFP500-R13,14,15,26,32,53,54,55,66,72
38	RFP500/10/12	1.5K 1/8W	RESISTORS	RFP500-R17, R57
39	RFP500/10/13	3.3K 1/8W	RESISTORS	RFP500-R18,19,37,58,59,77
40	RFP500/10/14	10 1/8W	RESISTORS	RFP500-R20,60
41	RFP500/10/15	7.5K 1/8W	RESISTORS	RFP500-R25,R65
42	RFP500/10/16	680 1/8W	RESISTORS	RFP500-R31,71
43	RFP500/10/17	1.5K 1/8W	RESISTORS	RFP500-R27, R67
44	RFP500/10/18	470 1/8W	RESISTORS	RFP500-R35,75
45	RFP500/10/19	3.0K 1/8W	RESISTORS	RFP500-R29, R69
46	RFP500/10/20	4.7K 1/8W	RESISTORS	RFP500-R34,38,74,78
47	RFP500/10/21	2.2K 1/8W	RESISTORS	RFP500-R30,33,70,73
48	RFP500/10/22	20K 1/8W	RESISTORS	RFP500-R16,56
49	RFP500/10/18	10K 1/8W	RESISTORS	RFP500-R28,68
50	RFP500/11/01	1K(GF06P-B1K)	S.V.R	RFP500-VR1,VR2,VR3,VR4
51	RFP500/12/01	RFP-500-ERL35-12	TRANSFORMER	RFP500-L2,L7
52	RFP500/12/02	RFP-500-EEL16-COM	TRANSFORMER	RFP500-L3,L8
53	RFP500/12/03	RFP-500-EE25-COM	TRANSFORMER	RFP500-L1,L6
54	RFP500/12/04	RFP-500-R630	CHOKE	RFP500-L5,L10
55	RFP500/12/05	RFP-500-T106-12	CHOKE	RFP500-L4,L9
56	RFP500/12/06	RFP-500-EE45	TRANSFORMER	RFP500-L11
57	RFP500/13/01	10GEEG3G	E.M.I FILTER	RFP500-EMLF
58	RFP500/14/01	HF-308	110V/220V SW	RFP500-SW1
59	RFP500/15/01	SR-1(250/10A)	AC SW	RFP500-SW2

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Bill of Material

Power Main PCB(V2.00)

ITEM	PART	PART NAME	DESCRIPTION	REMARKS
60	RFP500/16/01	275V/6.5A	FUSE(2mm)	RFP500-FUSE A,B
61	RFP500/17/001	KD1205PHV1	DC FAN 50mm x 15mm	RFP500-FAN(2001)
62	RFP500/17/001	KD1205PHB1	DC FAN 52mm x 15mm	RFP500-FAN
63	RFP500/18/01	XH-2P	CONNECTOR	RFP500-TEMP,TO-CC
64	RFP500/18/01	VH-2P	CONNECTOR	RFP500-AC IN
65	RFP500/18/01	XH-4P	CONNECTOR	RFP500-JP1,JP2

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Bill of Material

I/O Filter PCB(V2.00)

ITEM	PART	PART NAME	DESCRIPTION	REMARKS
1	RFPVO/01/05	PC817	IC	RFPVO- IC3,4,5
2	RFPVO/01/06	CD4060	IC	RFPVO-IC2
3	RFPVO/01/07	LM7805	IC	RFPVO-IC1
4	RFPVO/02/02	FR125	DIODE	RFPVO- D7,8,9,10
5	RFPVO/02/03	1N4148	DIODE	RFPVO- D1,2,3,4,6
6	RFPVO/02/04	2SC1815/2SC945	TRANSISTOR	RFPVO- Q1,2,3
7	RFPVO/03/01	RFP-500-T106-COM	CHOKE	RFPVO- L1
8	RFPVO/04/02	223/100V/65V	FILM CAP	RFPVO- C7
9	RFPVO/05/01	2200uF/25V	ELECTROLYTIC CAP	RFPVO- C3,4
10	RFPVO/05/02	330uF/35V	ELECTROLYTIC CAP	RFPVO- C9,10
11	RFPVO/05/03	22uF/25V	ELECTROLYTIC CAP	RFPVO- C1,5,6
12	RFPVO/05/04	10uF/50V	ELECTROLYTIC CAP	RFPVO- C8
13	RFPVO/07/01	104 400V	FILM CAP	RFPVO- C2
14	RFPVO/10/01	10K 1/8W	RESISTORS	RFPVO-R5
15	RFPVO/10/05	1K 1/8W	RESISTORS	RFPVO-R2,3,8,11,13,14
16	RFPVO/10/10	20K 1/8W	RESISTORS	RFPVO-R7
17	RFPVO/10/11	75K 1/8W	RESISTORS	RFPVO-R4,6
18	RFPVO/10/12	3.3K 1/8W	RESISTORS	RFPVO-R10,12
19	RFPVO/10/13	30K 1/8W	RESISTORS	RFPVO-R1
20	RFPVO/10/13	4.7K 1/8W	RESISTORS	RFPVO-R15
21	RFPVO/01/01	PH-4P	CONNECTOR	RFPVO-JP1
22	RFPVO/11/01	PH-9P	CONNECTOR	RFPVO-JP3
23	RFPVO/11/02	XH-3P	CONNECTOR	RFPVO-JP4
24	RFPVO/11/03	XH 5P	CONNECTOR	RFPVO-JP2
25	RFPVO/11/04	XH 8P	CONNECTOR	RFPVO-JP6
26	RFPVO/11/05	XH-2P	CONNECTOR	RFPVO-JP5
27	RFPVO/11/07	D-SUB25P	CONNECTOR	RFPVO-DC VO

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Bill of Material

Fan Control PCB(V2.00)

ITEM	PART	PART NAME	DESCRIPTION	REMARKS
1	FAN20/01/01	LM393	IC	FAN20-IC3
2	FAN20/01/02	LM339	IC	FAN20-IC5
3	FAN20/01/03	M51957B	IC	FAN20-IC1
4	FAN20/01/04	LM555	IC	FAN20-IC4
5	FAN20/01/05	78L05	IC	FAN20-IC2
6	FAN20/02/01	45N03	MOSFET	FAN20-Q6
7	FAN20/02/02	2SC945	TRANSISTOR	FAN20-Q1,Q2
8	FAN20/03/01	1N4148	DIODE	FAN20-D1,2,3,4,5,6,7,8
9	FAN20/04/01	104/50V	CAP	FAN20-C3,7,8,9,10
10	FAN20/05/01	100uF/35V	ELECTROLYTIC CAP	FAN20-C6
11	FAN20/05/02	22uF/25V	ELECTROLYTIC CAP	FAN20-C1,C5
12	FAN20/05/03	10uF/50V	ELECTROLYTIC CAP	FAN20-C2,C4,C11
13	FAN20/05/04	100K 1/8W	RESISTORS	FAN20-R3,14,15,17,18,19
14	FAN20/05/05	10K 1/8W	RESISTORS	FAN20-R2,5,7,8,9,12,13,16 FAN20-16,21,22,27,28
15	FAN20/05/06	12K 1/8W	RESISTORS	FAN20-R1
16	FAN20/05/09	1K 1/8W	RESISTORS	FAN20-R6,20
17	FAN20/05/11	820 1/8W	RESISTORS	FAN20-R11
18	FAN20/05/12	4.7K 1/8W	RESISTORS	FAN20-R4,10
20	FAN20/07/01	14mm 12V	BUZZ	FAN20-BB
21	FAN20/08/01	LED	5MM	FAN20-LED1
22	FAN20/09/01	D-SUB15P(HD)	CONNECTOR	FAN20-I/O
23	FAN20/09/02	PH-3P	CONNECTOR	FAN20-F1,F2
24	FAN20/09/03	PH-2P	CONNECTOR	FAN20-RT(VDD NC)