

# **READ THIS FIRST!**

## **Save Time and Avoid Damage!**

We realize that you will want to start installing your new equipment right away. But, you will save time and avoid costly damage by taking a few moments to review the following helpful information before you proceed.

### **1. Installation and Cable Connections**

Before turning the power on, consult the "Installation" section of this manual to obtain specific advice about cable connections, switch settings and jumper configurations.

### **2. Operation**

See the "Operation" section for proper use of your new equipment.

### **3. Calibration**

All Ross Video Terminal Equipment is factory calibrated. Adjustment of sealed calibration components or any repairs to this unit, are to be performed by an authorized Ross Video technician. Unauthorized repairs will void your Warranty.

### **In Case of Problems**

If you encounter any problems with the installation of this unit, please call our Customer Service Department at (613) 652-4886, 24 hours a day, 7 days a week.

Advice is available, without charge, for the life of this equipment, not just for the warranty period.

**Section 4B**

PS 7813  
Power Supply  
Issue 2B

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## PS-7813 • Power Supply – User's Manual

- Ross Part Number: **VM-7813-02**
- Document Issue: **2**
- Printing Date: March 16, 2000. Printed in Canada.

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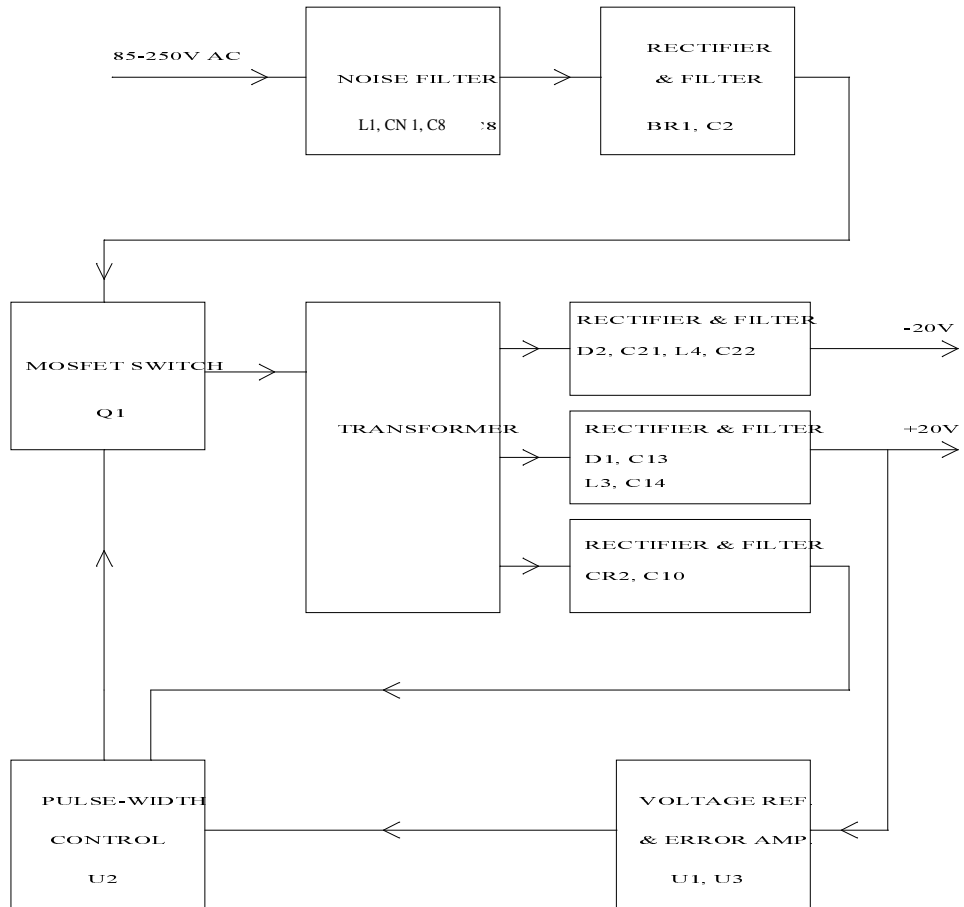
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# PS 7813 BLOCK DIAGRAM

Issue 2B



### **Introduction**

The PS-7813 power supply is designed to provide power to modules in the Ross Audio rack frame. It operates equally well on any of the world's power mains voltages. When two supplies are operated in a frame, they provide redundancy protection against supply or power source failure. In addition, reliability is increased as each supply will provide half of the frame load current and will run cooler. The power switch and fuse are conveniently accessible from the front of the supply. A lens on the frame door is illuminated by a green LED on the supply during normal operation.

#### **NOTE:**

This power supply must be serviced only at the factory because of the hazardous high voltages and currents that are present internally, as well as the possibility of disturbing special precautions needed to minimize electromagnetic radiation. An extender board or other test means is not available.

### **Circuit Description**

Filtering of common-mode noise is provided by L1 and CN1. The input voltage is rectified and filtered by BR1 and C2.

U2 is a switch-mode controller. It provides the functions of an oscillator, driver for the switching power transistor Q1, over-current limiter and voltage control. Zener diodes CR3, CR4, CR7 and CR8 protect Q1 against damage from high-voltage spikes.

Transformer T1 secondary voltage is rectified and filtered by CR2, C10 and C16 to provide the DC supply voltage for U2. The positive secondary voltage is rectified and filtered by D1, C13, L3, C14 and C15. The negative output voltage is obtained from similar circuit D2, etc.

Control circuit U1 regulates the output voltage. It contains an internal precision voltage reference and error amplifier. Any error in output voltage is fed to opto-isolator U3 which then corrects the width of the switching pulse generated by control circuit U2.

### **Adjustment**

The only adjustment is RV1 which is set in the factory for exactly +20.0 volts, as measured on the frame mother board at the power supply edge connector. It has been factory-adjusted and sealed, using a full 1A load in a special test jig. It is absolutely essential that RV1 be set precisely under these conditions or correct load sharing will not occur when the frame has two supplies.

Specifications

<b>Input</b>	Voltage	85-250 Volts, 50/60 Hz
	Power	55 VA max
<b>Output</b>	Voltage	$\pm 20.0$ V
	Current	1.0A
	Power	44 W
	Line Regulation	350m V change over full input range
	Ripple	<60m Vpp

## PS 7813

### Bill of Materials

8101A-001C Issue 2B

Item	QTY	REF	Part	Description	Part Number
1.	1	J1	CON\30P\156\E	NOT A BOUGHT PART	-----
2.	1	SCKTDS1	125-001	LED HOLDER FOR 90DEG DISPLAY MNT	125-001
3.	1	C17	n33	CAPACITOR CERAMIC 100V 2% n33	202-330
4.	1	C9	n68	CAPACITOR CERAMIC n68	202-680
5.	1	C7	1n	CAPACITOR CERAMIC 1n	203-100
6.	1	C19	10n	CAPACITOR CERAMIC 10n	204-100
7.	1	C3	1u 206-100	CAPACITOR CERAMIC 50V 20% 1u0	206-100
8.	1	C11	10n 210-004	CAPACITOR FILM 400V 10% 10n	210-004
9.	1	C18	10n 210-009	CAPACITOR FILM 100V 10% 10n	210-009
10.	1	CN1	210-013	CAPACITOR NETWORK u1 4n7 50V 20%	210-013
11.	3	C15,C16,C23	100n	CAPACITOR GLASS 100n	225-100
12.	1	C10	22u 240-006	CAPACITOR ELECTROLYTIC 22u	240-006
13.	2	C14,C22	220u 240-014	CAPACITOR ALUMINUM 35V 20% 220u	240-014
14.	1	C2	180u 240-017	CAPACITOR ELECTROLYTIC 400V 180u	240-017
15.	2	C13,C21	560u 240-018	CAPACITOR ELECTROLYTIC 35V 560u	240-018
16.	3	CR1,CR2,CR5	MUR180E	SWITCHMODE POWER RECTIFIER MUR180E	360-028
17.	1	BR1	RS406L	BRIDGE RECTIFIER 4A 800V RS406L	360-029
18.	1	CR7	1N4746C	DIODE ZENER 1N4746C	360-030
19.	2	D2,D1	MUR1620CT	ULTRA FAST RECOVERY RECTIFIER	360-031
20.	4	CR3,CR4,CR6,CR8	1N987B	DIODE ZENER 1N987B	360-032
21.	1	DS1	361-023	LED 5mm GREEN SUPER BRIGHT	361-023
22.	1	SHLDMP7	365-001	PCB EJECTOR	365-001
23.	1	F1	2.0A 390-005	FUSE 2.0A 250V SLOBLO	390-005
24.	1	F1 CAP	391-004	FUSE CAP	391-004
25.	1	F1 HLDR	391-006	FUSE HOLDER HORIZONTAL PCB MOUNT	391-006
26.	2	D2HEATSINK,D1HEATSINK	405-009	HEATSINK PCB MOUNT IRF730	405-009
27.	1	Q1HEATSINK	405-010	HEATSINK TO-247 SCREW MOUNT	405-010
28.	2	L4,L3	CTP4407115 47u	INDUCTOR TOROIDAL CTP4407115 47u	440-030
29.	1	U3	MOC8101	OPTO ISOLATOR	504-150
30.	1	U1	TL431CLP	ADJUSTABLE PRECISION SHUNT REGULATOR	504-151
31.	1	U2	MIC38HC42BN	BICMOS CURRENT MODE SWITCHING REGULATOR	504-152
32.	3	NUTQ1,NUTD1,NUTD2	650-012	NUT HEX	650-012
33.	1	RV1	200R 1T	VARIABLE RESISTOR 1/4 DIA 1-TURN 200R	710-003
34.	1	PCB	8101-001-02	8101 POWER SUPPLY PCB	8101-001-02
35.	1	COVER	8110-114-03	POWER SUPPLY COVER	8110-114-03
36.	1	SHIELD	8110-115-03	POWER SUPPLY SHIELD	8110-115-03
37.	1	R3	2K37 1%	RESISTOR 1/4W 1% 2K37	813-237
38.	1	R18	2K49 1%	RESISTOR 1/4W 1% 2K49	813-249
39.	1	R19	3K32 1%	RESISTOR 1/4W 1% 3K32	813-332
40.	1	R14	6K81 1%	RESISTOR 1/4W 1% 6K81	813-681
41.	1	R6	18K2 1%	RESISTOR 1/4W 1% 18K2	814-182
42.	1	R7	130K 1%	RESISTOR 1/4W 1% 130K	815-130
43.	2	R21,R10	10R	RESISTOR 1/2W 5% 10R	825-100
44.	1	R13	620R	RESISTOR 1/2W 5% 620R	826-620
45.	1	R20	1K	RESISTOR 1/2W 5% 1K	827-100
46.	2	R8,R16	1K5	RESISTOR 1/2W 5% 1K5	827-150
47.	2	R15,R25	2K2	RESISTOR 1/2W 5% 2K2	827-220
48.	1	R4	10K	RESISTOR 1/2W 5% 10K	828-100
49.	2	R1,R9	120K	RESISTOR 1/2W 5% 120K	829-120
50.	3	R11,R22,R23	1R 840-061	RESISTOR 2W 5% 500V 1R	840-061
51.	1	R2	30K 840-062	RESISTOR 3W 5% 30K	840-062
52.	1	RT1	10R 841-003	THERMISTOR NTC 10R SURGE CURRENT LIM	841-003
53.	6	MP1,MP2,MP3,MP4,MP5,MP6	850-026	SCREW 4-40 5/16 BIND	850-026
54.	1	Q1 SCREW	850-005	SCREW 4-40 5/16 BIND PHILIPS	850-005
55.	1	SW1	906-021	SWITCH 90DEG 3P SPST	906-021
56.	1	T1	940-018	TRANSFORMER 250V/2X21 TEP5738 S940-018	940-018
57.	1	L1	CTP3658V	COMMON MODE INDUCTOR	940-020
58.	1	Q1	MTW8N60E	MOSFET 8A 600V 0.5R	950-044
59.	1	Q1	960-015	WASHER SPRING 4-40	960-015