

# **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 4**

PS 7558

Power Supply

Issue 5 & 6

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## PS 7558 • Power Supply – User’s Manual

- Ross Part Number: **AM-7558-06**
- Document Issue: **6**
- Printing Date: March 10, 2000. Printed in Canada.

The information contained in this guide is subject to change without notice or obligation.

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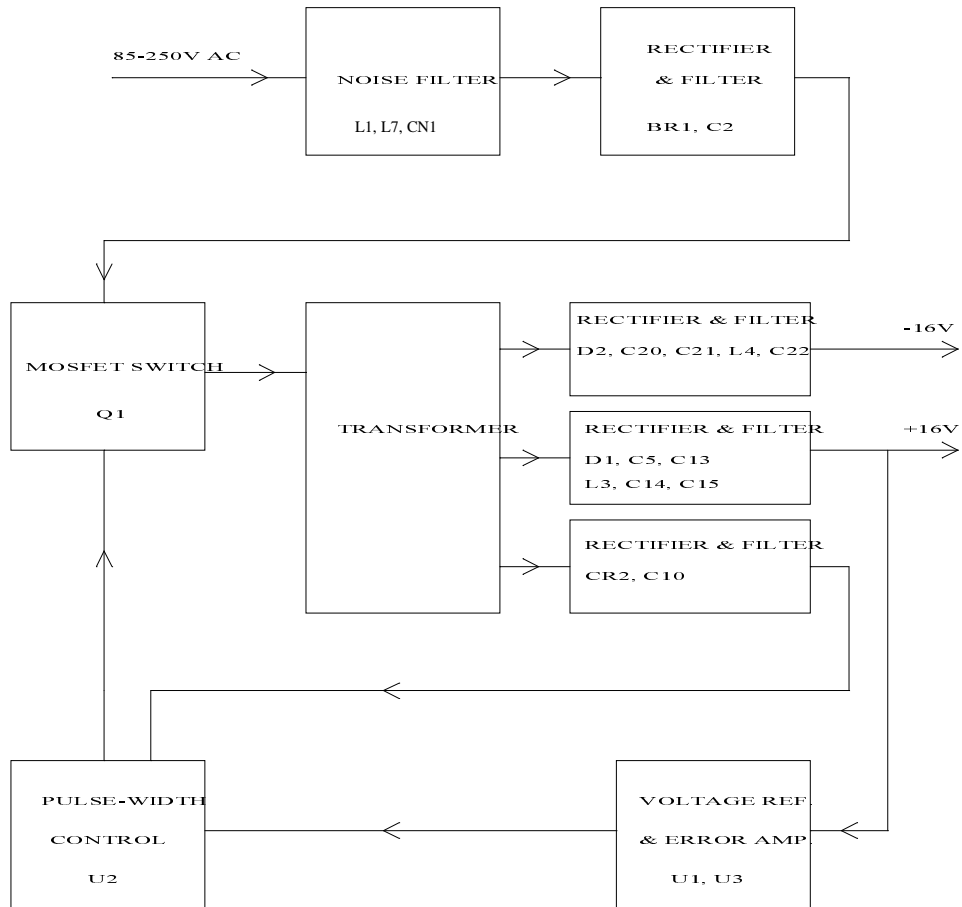
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# PS 7558 BLOCK DIAGRAM



### **Introduction**

The PS-7558 power supply is designed to provide power to modules in the Ross audio tray. It operates equally well on any of the world's power mains voltages. When two supplies are operated in a tray, they provide redundancy protection against supply or power source failure. In addition, reliability is increased as each supply will provide half of the tray load current and will run cooler. The power switch and fuse are conveniently accessible from the front of the supply. A lens on the tray 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, L7 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, CR6 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, C5, 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 +16.0 volts, as measured on the tray mother board at the power supply edge connector. It has been factory-adjusted and sealed, using a full 1.4A 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 tray has two supplies.

**Specifications**

|               |                 |                                     |
|---------------|-----------------|-------------------------------------|
| <b>Input</b>  | Voltage         | 85-250 Volts, 50/60 Hz              |
|               | Power           | 55 VA max                           |
| <b>Output</b> | Voltage         | $\pm 16.0$ V                        |
|               | Current         | 1.4 A                               |
|               | Power           | 45 W                                |
|               | Line Regulation | 350 mV change over full input range |
|               | Ripple          | <60 mV pp                           |

## PS 7558 Bill of Materials

## 8101A-001E

| Item | QTY | REF                        | Part          | Description                           | Part Number |
|------|-----|----------------------------|---------------|---------------------------------------|-------------|
| 1    | 1   | J1                         | CON\30P\156\E | NOT A BOUGHT PART                     | -----       |
| 2    | 1   | R28                        | NVR           | NO VALUE,RES,5%                       | -----       |
| 3    | 1   | R22                        | NVR R1/2W UP  | NO VALUE,RES,VERTICAL,MNT             | -----       |
| 4    | 1   | SCKTDS1                    | 125-001       | HOLDER,LED,5MM,90DEG                  | 125-001     |
| 5    | 1   | C17                        | n33           | CAP,CER,100V,2%,n33                   | 202-330     |
| 6    | 1   | C9                         | n68           | CAP,CER,n68                           | 202-680     |
| 7    | 1   | C7                         | 1n            | CAP,CER,1n                            | 203-100     |
| 8    | 1   | C19                        | 10n           | CAP,CER,10n                           | 204-100     |
| 9    | 1   | C3                         | 1u 206-100    | CAP,CER,50V,20%,1u0                   | 206-100     |
| 10   | 1   | C11                        | 10n 210-004   | CAP,FILM,400V,10%,10n                 | 210-004     |
| 11   | 1   | C18                        | 10n 210-009   | CAP,FILM,100V,10%,10n                 | 210-009     |
| 12   | 1   | CN1                        | 210-013       | CAP,NTWRK,50V,20%,u1,4n7              | 210-013     |
| 13   | 1   | C8                         | 100n 210-015  | CAP,POLY,250V,100n                    | 210-015     |
| 14   | 3   | C15,C16,C23                | 100n          | CAP,GLAS,100n                         | 225-100     |
| 15   | 1   | C10                        | 22u 240-006   | CAP,ELEC,22u                          | 240-006     |
| 16   | 1   | C2                         | 180u 240-017  | CAP,ELEC,400V,180u                    | 240-017     |
| 17   | 6   | C5,C13,C14,C20,<br>C21,C22 | 560u 240-018  | CAP,ELEC,35V,560u                     | 240-018     |
| 18   | 1   | CORD                       | 330-002       | AC.LINE/CORD                          | 330-002     |
| 19   | 3   | CR1,CR2,CR5                | MUR180E       | RECTIFIER,SWITCHMODE,POWER            | 360-028     |
| 20   | 1   | BR1                        | RS406L        | RECTIFIER,BRIDGE,4A,800V              | 360-029     |
| 21   | 1   | CR7                        | 1N4746C       | DIODE,ZENER                           | 360-030     |
| 22   | 2   | D2,D1                      | MUR1620CT     | RECTIFIER,ULTRA FAST RECOVERY         | 360-031     |
| 23   | 4   | CR3,CR4,CR6,CR8            | 1N987B        | DIODE,ZENER                           | 360-032     |
| 24   | 1   | DS1                        | 361-023       | LED,5mm,GRN,S.B                       | 361-023     |
| 25   | 1   | SHLDMP7                    | 365-001       | EJECTOR,PCB                           | 365-001     |
| 26   | 1   | F1                         | 2A 390-005    | FUSE,2.0A,250V,SLOBLO                 | 390-005     |
| 27   | 2   | *F3,F2                     | 2A 390-016    | FUSE,2A,125V,FAST ACTING,SUBMIN       | 390-016     |
| 28   | 1   | F1 CAP                     | 391-004       | FUSE,CAP                              | 391-004     |
| 29   | 1   | F1 HLDR                    | 391-006       | FUSE,HOLDER,HORIZONTAL,PCB MNT        | 391-006     |
| 30   | 2   | D2HEATSINK,<br>D1HEATSINK  | 405-009       | HEATSINK,TO-220,PCB MNT,U-SHAPE       | 405-009     |
| 31   | 1   | Q1HEATSINK                 | 405-010       | HEATSINK,TO-247,SCREW MNT,HAT-SHAPE   | 405-010     |
| 32   | 1   | L6                         | 440-022       | IND,TOROID,CTP3659V                   | 440-022     |
| 33   | 2   | L3,L4                      | 47u 440-030   | IND,47uH,TOROID,CTP4407115            | 440-030     |
| 34   | 1   | L7                         | 8u2 440-032   | IND,8.2uH,TOROID,CEP4736-18           | 440-032     |
| 35   | 1   | U3                         | MOC8101TV     | ISOLATOR,OPTO,(MOC8102TV) THL         | 504-150     |
| 36   | 1   | U1                         | TL431CLP      | REGULATOR,ADJUSTABLE PREC,SHUNT THL   | 504-151     |
| 37   | 1   | U2                         | MIC38HC42BN   | REGULATOR,BICMOS,CURRENT MODE SWI THL | 504-152     |
| 38   | 1   | NUTQ1                      | 650-012       | NUT,HEX                               | 650-012     |
| 39   | 1   | RV1                        | 200R 1T       | TRIMPOT,1/4 DIA,1T,200R               | 710-003     |
| 40   | 1   | LABEL                      | 7558-084-01   | PS7558 COVER LABEL                    | 7558-084-01 |
| 41   | 1   | PCB                        | 8101-001-05   | 8101 POWER SUPPLY ----- PCB           | 8101-001-05 |
| 42   | 1   | COVER                      | 8110-114-04   | POWER SUPPLY COVER                    | 8110-114-04 |
| 43   | 1   | SHIELD                     | 8110-115-03   | POWER SUPPLY ----- SHLD               | 8110-115-03 |
| 44   | 1   | R3                         | 2K37 1%       | RES,1/4W,1%,2K37                      | 813-237     |
| 45   | 1   | R18                        | 2K49 1%       | RES,1/4W,1%,2K49                      | 813-249     |
| 46   | 1   | R19                        | 3K32 1%       | RES,1/4W,1%,3K32                      | 813-332     |
| 47   | 1   | R14                        | 5K23 1%       | RES,1/4W,1%,5K23                      | 813-523     |
| 48   | 1   | R6                         | 14K 1%        | RES,1/4W,1%,14K                       | 814-140     |
| 49   | 1   | R7                         | 100K 1%       | RES,1/4W,1%,100K                      | 815-100     |
| 50   | 2   | R26,R27                    | 1R            | RES,1/2W,5%,1R                        | 824-100     |
| 51   | 2   | R21,R10                    | 10R           | RES,1/2W,5%,10R                       | 825-100     |
| 52   | 1   | R13                        | 390R          | RES,1/2W,5%,390R                      | 826-390     |
| 53   | 1   | R20                        | 1K            | RES,1/2W,5%,1K                        | 827-100     |

## PS-7558 Power Supply

Note: \* only used on Issue 6

PS-7558 - Bill Of Materials Cont'd.

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| Item | QTY | REF                             | Part          | Description                          | Part Number |
|------|-----|---------------------------------|---------------|--------------------------------------|-------------|
| 54   | 2   | R15,R25                         | 1K2           | RES,1/2W,5%,1K2                      | 827-120     |
| 55   | 2   | R8,R16                          | 1K5           | RES,1/2W,5%,1K5                      | 827-150     |
| 56   | 1   | R4                              | 10K           | RES,1/2W,5%,10K                      | 828-100     |
| 57   | 2   | R1,R9                           | 120K          | RES,1/2W,5%,120K                     | 829-120     |
| 58   | 4   | R11,R12,R23,R29                 | 1R 840-061 UP | RES,2W,5%,500V,1R,VERT MNT           | 840-061     |
| 59   | 1   | R2                              | 30K 840-062   | RES,3W,5%,30K                        | 840-062     |
| 60   | 1   | RT1                             | 10R 841-003   | THERMISTOR,NTC,10R,SURGE,CURRENT LIM | 841-003     |
| 61   | 1   | Q1SCREW                         | 850-005       | SCREW,4-40,3/8,BIND                  | 850-005     |
| 62   | 6   | MP1,MP2,MP3,<br>MP4,MP5,MP6     | 850-026       | SCREW,4-40,5/16,BIND                 | 850-026     |
| 63   | 4   | WSHR11,WSHR12,<br>WSHR23,WSHR29 | 870-032       | SPACER,WASH-AWAY,ON-END,R1/2W,0.100  | 870-032     |
| 64   | 1   | SW1                             | 906-021       | SWITCH,90DEG,3P,SPST                 | 906-021     |
| 65   | 1   | L1                              | 940-020       | IND,COMMON MODE,CTP3658V             | 940-020     |
| 66   | 1   | T1                              | 940-021       | TRANSFORMER ----- S940-021           | 940-021     |
| 67   | 1   | Q1                              | MTW8N60E      | MOSFET,8A,600V,0.5R                  | 950-044     |
| 68   | 1   | HSTUBING RT1                    | 955-005       | TUBE,HEAT SHRINK,BLK,3/8DIA.,CSA/UL  | 955-005     |
| 69   | 1   | HSTUBING L1                     | 955-009       | TUBE,HEAT SHRINK,BLK,1/2DIA.,CSA/UL  | 955-009     |
| 70   | 1   | Q1WASHER                        | 960-015       | WASHER,SPRING,4-40                   | 960-015     |



**NOTES**

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## Ross Gear Terminal Equipment • Warranty and Repair Policy

This **Ross Gear Terminal Equipment** product is warranted to be free of any defect with respect to performance, quality, reliability and workmanship for a period of **FIVE (5)** years from the date of shipment from our factory.

In the event that your **Ross Gear** product proves to be defective in any way during this warranty period, we will gladly repair or replace this piece of equipment with a unit of equal or superior performance characteristics.

Should you find that this **Ross Gear** product has failed after your warranty period has expired, we will repair your defective piece of equipment for as long as suitable replacement components are available. You, the owner, will bear any labour and/or component costs incurred in the repair or refurbishment of said equipment, beyond the **FIVE (5)** year warranty period.

Should your **Ross Gear** product be of our **Digital Terminal Equipment** product line, a power supply, or carries any surface mount devices, proves to be defective, we would ask that your piece of equipment be repaired by an authorized **Ross Video Limited** factory representative. Any attempt to repair this product by anyone other than an authorized **Ross Video Limited** factory representative, will void your warranty.

If this is a manual for a **Ross Gear** product of our **Digital Terminal Equipment** product line, a power supply, or piece of equipment which carries surface mount devices, you will find it provides all pertinent information for the safe installation and operation of your Ross Gear product.

If this is a manual for a **Ross Gear** product from our **Analog Terminal Equipment** product line, you will find it provides all pertinent information for the safe installation and operation of your **Ross Gear** product. Included in this manual if this product does not carry any surface mount devices, you will also find schematics, bills of materials and layout drawings. These are provided for your convenience, should you find it necessary to perform discretionary field repair or modifications to your **Ross Gear** product.

**Ross Video Limited** reserves the right to assess any modifications or repairs made by you and decide whether they fall within warranty limitations, should you decide to return your **Ross Gear** product for repair.

In no event shall **Ross Video Limited** be liable for direct, indirect, special, incidental, or consequential damages (including loss of profits) incurred by the use of this product. Implied warranties are expressly limited to the duration of this warranty.

### **In Case of Problems:**

Should any problem arise with your **Ross Gear Terminal Equipment Product**, please contact our **Customer Service Department** at **613-652-4886**, 24 hours a day, 7 days a week.

A Return Material Authorization number (RMA) will be issued to you, as well as specific shipping instructions, should you wish our factory to repair your **Ross Gear** product. A temporary replacement, if required, will be made available for a nominal charge. Any shipping costs incurred, will be the responsibility of you, the customer. All products shipped to you from **Ross Video Limited**, will be shipped collect.

**Ross Gear Terminal Equipment** product advice is available without charge for the life of this equipment, not just the warranty period.