VMIVME-PS7-33

1,000 W POWER SUPPLY

INSTRUCTION MANUAL

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NOTICE

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RECORD OF REVISIONS

REVISION LETTER	DATE	PAGES INVOLVED	CHANGE NUMBER
A	06/03/91	Release per ECO	91-0160
B	10/13/92	Cover, page ii, and Appendix	92-0347

VMIC
SAFETY SUMMARY

THE FOLLOWING GENERAL SAFETY PRECAUTIONS MUST BE OBSERVED DURING ALL PHASES OF THIS OPERATION, SERVICE, AND REPAIR OF THIS PRODUCT. FAILURE TO COMPLY WITH THESE PRECAUTIONS OR WITH SPECIFIC WARNINGS ELSEWHERE IN THIS MANUAL VIOLATES SAFETY STANDARDS OF DESIGN, MANUFACTURE, AND INTENDED USE OF THE PRODUCT. VME MICROSYSTEMS INTERNATIONAL CORPORATION ASSUMES NO LIABILITY FOR THE CUSTOMER'S FAILURE TO COMPLY WITH THESE REQUIREMENTS.

GROUND THE SYSTEM

To minimize shock hazard, the chassis and system cabinet must be connected to an electrical ground. A three-conductor AC power cable should be used. The power cable must either be plugged into an approved three-contact electrical outlet or used with a three-contact to two-contact adapter with the grounding wire (green) firmly connected to an electrical ground (safety ground) at the power outlet.

DO NOT OPERATE IN AN EXPLOSIVE ATMOSPHERE

Do not operate the system in the presence of flammable gases or fumes. Operation of any electrical system in such an environment constitutes a definite safety hazard.

KEEP AWAY FROM LIVE CIRCUITS

Operating personnel must not remove product covers. Component replacement and internal adjustments must be made by qualified maintenance personnel. Do not replace components with power cable connected. Under certain conditions, dangerous voltages may exist even with the power cable removed. To avoid injuries, always disconnect power and discharge circuits before touching them.

DO NOT SERVICE OR ADJUST ALONE

Do not attempt internal service or adjustment unless another person, capable of rendering first aid and resuscitation, is present.

DO NOT SUBSTITUTE PARTS OR MODIFY SYSTEM

Because of the danger of introducing additional hazards, do not install substitute parts or perform any unauthorized modification to the product. Return the product to VME Microsystems International Corporation for service and repair to ensure that safety features are maintained.

DANGEROUS PROCEDURE WARNINGS

Warnings, such as the example below, precede only potentially dangerous procedures throughout this manual. Instructions contained in the warnings must be followed.

WARNING

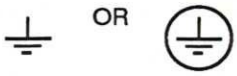
DANGEROUS VOLTAGES, CAPABLE OF CAUSING DEATH, ARE PRESENT IN THIS SYSTEM. USE EXTREME CAUTION WHEN HANDLING, TESTING, AND ADJUSTING.

SAFETY SYMBOLS

GENERAL DEFINITIONS OF SAFETY SYMBOLS USED IN THIS MANUAL

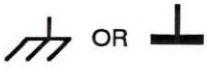
Instruction manual symbol: the product is marked with this symbol when it is necessary for the user to refer to the instruction manual in order to protect against damage to the system.

Indicates dangerous voltage (terminals fed from the interior by voltage exceeding 1000 volts are so marked).



Protective conductor terminal. For protection against electrical shock in case of a fault. Used with field wiring terminals to indicate the terminal which must be connected to ground before operating equipment.

Low-noise or noiseless, clean ground (earth) terminal. Used for a signal common, as well as providing protection against electrical shock in case of a fault. Before operating the equipment, terminal marked with this symbol must be connected to ground in the manner described in the installation (operation) manual.



Frame or chassis terminal. A connection to the frame (chassis) of the equipment which normally includes all exposed metal structures.

Alternating current (power line).

Direct current (power line).

Alternating or direct current (power line).

WARNING

The WARNING sign denotes a hazard. It calls attention to a procedure, a practice, a condition, or the like, which, if not correctly performed or adhered to, could result in injury or death to personnel.

CAUTION

The CAUTION sign denotes a hazard. It calls attention to an operating a procedure, a practice, a condition, or the like, which, if not correctly performed or adhered to, could result in damage to or destruction of part or all of the system.

NOTE:

The NOTE sign denotes important information. It calls attention to a procedure, a practice, a condition or the like, which is essential to highlight.

VMIVME-PS7-33
1,000 W POWER SUPPLY INSTRUCTION MANUAL

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APPENDIX

SECTION 1

INTRODUCTION

1.1 FUNCTIONAL DESCRIPTION

The VMIC VMIVME-PS7-33 Power Supply is an advanced, high reliability power conversion unit providing high power density. The VMIC VMIVME-PS7-33 Power Supply meets or exceeds many of today's stringent international safety and EMI standards.

Improvements in electrical, mechanical, and heat transfer technology allow component stresses to be kept well within manufacturer's conservative ratings, ensuring high reliability.

NOTE

THE VMIC VMIVME-PS7-33 POWER SUPPLY MUST HAVE THE VENTILATION INLET AND OUTLET REGION UNOBSTRUCTED. ALWAYS ALLOW FOR PROPER AIRFLOW COOLING OF THE POWER SUPPLY.

SECTION 2

PHYSICAL DESCRIPTION AND SPECIFICATIONS

2.1 PHYSICAL DESCRIPTION

The VMIC VMIVME-PS7-33 Switching Power Supply is of channeled frame construction, housed on and in an anodized aluminum case. Ventilation cutouts facilitate convection and forced airflow cooling. Mounting of the VMIC VMIVME-PS7-33 Switching Power Supply is aided by matching predrilled holes for mounting to the side panels at the back of a VMIC chassis. The VMIC VMIVME-PS7-33 Power Supply is intended for use with stationary equipment only. The VMIC VMIVME-PS7-33 Power Supply has a deadweight of less than eight lbs.

2.2 MECHANICAL SPECIFICATIONS

The VMIC VMIVME-PS7-33 Switching Power Supply is mechanically compatible with several VMIC chassis, racks, and other power supplies. A recommended minimum free airflow of 15 square inch, or 46 CFM of forced air is required for the proper cooling of the power supply. The VMIC VMIVME-PS7-33 Power Supply has approximately 672 BTU per hour of dissipating heat, that depends largely on the line-voltage level and DC loading level of the power supply. DC output stud bolts are standard size 5/16-18, and should be torqued to 65-inch pounds to ensure low resistance connections.

2.3 ELECTRICAL AC SPECIFICATIONS

The VMIC VMIVME-PS7-33 Power Supply is available for CONTINENTAL power of 230 V ±30 Vrms alternating current of 50 Hz ±3 Hz line frequency or U.S. DOMESTIC power of 110 V ±20 Vrms alternating current of 60 Hz ±3 Hz line frequency. The VMIC VMIVME-PS7-33 Switching Power Supply is shipped with the frequency and current limits preset and sealed. Improper adjustments of these controls will cause damage to the power supply and/or the loading circuits. Tampering or alteration of these adjustments is not recommended, refer such adjustments and other servicing to VMIC's factory service. The VMIC VMIVME-PS7-33 Power Supply is shipped per customer's order for CONTINENTAL 230 V 50 Hz power line operation or U.S. DOMESTIC 110 V 60 Hz power line operation. The AC power cord is terminated with a standard NEMA 5-15 type cord cap plug for U.S. DOMESTIC power service. The input AC power cord provided for CONTINENTAL service is not supplied with a cord cap. Thus, a cord cap is to be furnished by the user.

Efficiency is typically eighty percent (80%). The dielectric withstand voltage is 3,750 Vrms input-to-chassis or 700 VDC output-to-chassis. The AC input surge protection is 17 A, of approximately 2 times the steady-state peak current from

cold start. The AC undervoltage has proprietary proportional drive and bias bootstrap protection against damage for undervoltage operation. Capacitive coupling provides approximately 3.5 mA to ground at normal line voltage. Thermal powerdown circuits cut off the power supply in case of local overtemperature. The unit resets automatically if excess temperature abates.

NOTE

PLEASE REFER TO THE APPENDICES FOR ASSEMBLY DRAWINGS, PARTS LIST, AND SCHEMATIC.

2.4 ELECTRICAL DC SPECIFICATIONS

The VMIC VMIVME-PS7-33 Switching Power Supply is electrically compatible with a wide variety of VMIC products. A unique feature of the VMIC VMIVME-PS7-33 Switching DC Power Supply is the soft DC start ability that protects critical load circuit components when powering up a system; thus, prolonging circuit integrity.

The conversion frequency is 80 kHz. The DC load regulation is typically .4 percent from 0 to maximum rated values. The ripple noise is typically 100 mV pp. The dynamic response peak transient is less than 1 percent or 100 mV for step-load change from 75 to 50 percent or 100 percent maximum ratings. The VMIC VMIVME-PS7-33 Power Supply DC output voltage regulation tolerance is .4 percent. The DC power sense is internal or remote.

The DC sustaining is typically 20 ms after loss of normal AC power, thus minimizing stress to delicate electronic circuits. Recovery time is 400 µs to recover to within 1 percent of adjusted output. A minimum DC load of 10 percent is required for optimum control and system performance. The maximum DC load is 66 A typical, not to exceed 33 A per output.

Overvoltage protection is provided. The DC output current overload is protected by foldback current limiting with automatic recovery. DC reverse voltage protection is provided against voltage applied across output terminals up to rated voltage and current with proper loading. The DC bleed-down is resistive, automatic, and dynamic.

Overtemperature DC power shutdown will function when the power supply overheats because of overload endurance, or insufficient cooling air circulation, thus causing heat build-up.

2.5 ENVIRONMENTAL SPECIFICATIONS

Safety:	The VMIC VMIVME-PS7-33 Power Supply meets or exceeds the following specs: UL 478, CSC 22.2 154, IEC 380, IEC 435, VDE 0804, 805, and 806.
Shock and Vibration:	MIL STD 810-D, Method 516.3 Procedure III, Category 1.
Static Storage:	0 to 85 °C
Dynamic Operation:	0 to 70 °C.
Temperature Coefficient:	.02 percent /°C.

SECTION 3

ADJUSTMENTS

3.1 ADJUSTMENTS

The VMIC VMIVME-PS7-33 Power Supply is shipped with preadjusted DC voltage set to nominal 15 V ± .01 V. The power supply DC output voltage may be readjusted ± 5 percent by the "DC ADJ" pot if needed.

3.2 REQUIRED TOOLS, EQUIPMENT, AND TEST POINTS

a. Nonmetallic adjustor, flat-blade screwdriver type
b. Quality digital voltmeter; 3 1/2 digits or better
c. Metering test points are DC bus tie-points on the backplane

NOTE

PLEASE REFER TO THE APPENDIX FOR ASSEMBLY DRAWINGS, PARTS LIST, AND SCHEMATIC.

SECTION 4

ACCESSORIES CONFIGURATION AND INSTALLATION

4.1 UNPACKING PROCEDURES

CAUTION

MANY OF THE COMPONENTS ASSEMBLED ON AND IN VMIC's PRODUCTS ARE SENSITIVE TO ELECTROSTATIC DISCHARGE AND DAMAGE CAN OCCUR ON BOARDS THAT ARE SUBJECTED TO A HIGH ENERGY ELECTROSTATIC FIELD. UNUSED BOARDS SHOULD BE STORED IN THE SAME PROTECTIVE COVERS AND BOXES IN WHICH THEY WERE SHIPPED. WHEN THE BOARD IS TO BE LAID ON A BENCH FOR CONFIGURING, ETC., IT IS SUGGESTED THAT CONDUCTIVE MATERIAL BE INSERTED UNDER THE BOARD TO PROVIDE A CONDUCTIVE SHUNT. APPROVED ESD PROCEDURES ARE RECOMMENDED WHEN HANDLING VMIC PRODUCTS.

Upon receipt, any precautions found in the shipping container should be observed. All items should be carefully unpacked and thoroughly inspected for damage that might have occurred during shipment. The product(s) should be checked for broken components, damaged circuit board(s), heat damage, and other visible contamination. All claims arising from shipping damage must be filed with the carrier and a complete report sent to VMIC together with a request for advice concerning disposition of the damaged item(s).

4.2 PHYSICAL INSTALLATION

4.2.1 Installation

The VMIC VMIVME-PS7-33 Power Supply power module is mounted to the universal mounting chassis. The entire VMIC VMIVME-PS7-33 Power Supply assembly can be mounted to the back of the VMIC VMEbus standard chassis (Model VMIVME-120 or equivalent). SS 8-32 bolting hardware is provided. Matching No. 8 holes must be drilled by the user to match predrilled mounting holes of the VMIVME-PS7-33 Power Supply universal chassis.

The VMIC VMIVME-PS7-33 Power Supply chassis is formed to fit the connector protector protrusions of the VMEbus chassis which provides excellent support for the VMIC VMIVME-PS7-33 Power Supply. Before drilling the matching holes, remove all of the VMEbus boards from the chassis slots, always exercising good ESD safety procedures when handling PC boards. Suggestion: Masking tape around and over the spot to be drilled will help contain most of the drilling debris. After securing the VMIC VMIVME-PS7-33 Power Supply to the chassis, connect the black wires to the DC GND connecting points of the chassis backplane. Connect the remaining wires as required.

4.2.2 Before Applying Power: Checklist

a. Verify that the intended AC power source matches the power specified on the name plate.

b. Verify that DC polarity is properly connected.

c. Connect the VMIC VMIVME-PS7-33 Power Supply to the proper AC power as indicated on the input power ID plate located on the back of the universal chassis near the input power connector. With a 3 1/2 digit or better DVM, verify that the DC voltage is correct, then turn the power OFF before inserting the VMEbus boards into their respective locations. (Refer to Section 3 for power supply adjustment procedures.)

d. After inserting the VMEbus boards, turn the AC power ON and verify the DC voltage again. After a five minute stabilization the power supply DC adjustment potentiometer can be adjusted to read 15.00 ± .01 V on the DVM.

4.3 DC POWER WIRING HARNESS

DC power wiring harness for the VMIVME-PS7-33 Power Supply is 16 AWG gauge multistrand wire.

NOTE

PLEASE REFER TO THE APPENDIX FOR ASSEMBLY DRAWINGS, PARTS LIST, AND SCHEMATIC.

SECTION 5

MAINTENANCE AND WARRANTY

5.1 MAINTENANCE

This section of the technical manual provides information relative to the care and maintenance of VMIC's products. Should the products malfunction, the user should verify the following:

a. Software
b. System configuration
c. Electrical connections
d. Jumper or configuration options
e. Boards fully inserted into their proper connector location
f. Connector pins are clean and free from contamination
g. No components of adjacent boards are disturbed when inserting or removing the board from the VMEbus card cage
h. Quality of cables and I/O connections

User level repairs are not recommended. Contact VMIC for a Return Authorization Number.

5.2 MAINTENANCE PRINTS

The appendix(ices) to this manual contain(s) drawings and diagrams for reference purposes.

5.3 WARRANTY

VMIC's Standard Products are warranted to be free from defects in material and workmanship for a period of two years (24 months) from the date of shipment. In discharge of this warranty, VMIC, at its option, agrees to either repair or replace, at VMIC's facility and at VMIC's discretion, any part, component, subassembly accessory, or any hardware, software, or system product, which under proper and normal use proves defective in material and workmanship.

The customer shall provide notice to VMIC of each such defect within a reasonable time after the customer's discovery of such defect.

In order to return the defective product(s) or part(s) at VMIC's expense, the customer must contact VMIC's Customer Service Department to obtain a Call Ticket Number. The defective product(s) or part(s) must also be properly boxed and

weighed. After a VMIC Call Ticket Number and Return Authorization Number has been obtained, the defective product(s) or part(s) may be returned (transportation collect for surface UPS) to VMIC. Any replaced or repaired product(s) or part(s) will be shipped back to the customer's at the expense of VMIC (also UPS surface).

The customer should be aware that the above process can sometimes take up to eight (8) days for the shipment to reach VMIC. The customer has the option to ship the defective product(s) or part(s) at the customer's own expense if the customer cannot afford this possible delay.

There shall be no warranty or liability on any VMIC product(s) or part(s) that is (are) damaged or subjected to accident(s), perils of nature, negligence, overtemperature, overvoltage, misapplication of electrical power, insertion or removal of boards from backplanes and/or I/O connectors with power applied by the customer(s), appointee(s), or any other person(s) without the expressed approval of VMIC.

Final determination of warranty eligibility shall be made by VMIC, and if a warranty claim is considered invalid for any reason, the customer will be charged for services performed and expenses incurred by VMIC in repair, handling and shipping the returned product or part. Determination as to whether the item is within warranty, coverage shall not be unreasonably withheld.

The warranty period of the replacement or repaired product(s) or part(s) shall terminate with the termination of the warranty period with respect to the original product(s) or part(s) for all replacement parts supplied or repairs made during the original warranty period.

THE FOREGOING WARRANTY AND REMEDY ARE EXCLUSIVE AND VMIC SHALL HAVE NO OTHER OR ADDITIONAL LIABILITY TO BUYER OR TO ANYONE CLAIMING UNDER BUYER (THIRD PARTY) UNDER ANY OTHER AGREEMENT OR WARRANTY, EXPRESS OR IMPLIED EITHER IN FACT OR BY OPERATION OF THE LAW, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS, STATUTORY, OR OTHERWISE. VMIC SHALL HAVE NO LIABILITY FOR SPECIAL OR CONSEQUENTIAL DAMAGES OF ANY KIND OR FROM ANY CAUSE ARISING OUT OF THE INSTALLATION OR USE OF ANY PRODUCT FURNISHED HEREUNDER.

5.4 OUT-OF-WARRANTY REPAIR POLICY

The following sections describe VMIC's policy on repairs and warranties on repaired products.

5.4.1 Repair Category

VMIC's repair policy of standard products is divided into two categories, depending on the item to be repaired. These categories are:

a. Product Exchange
b. Fixed Price Repair

Category 1 (product exchange) represents the fastest turn around of the two categories. In this case, the customer sends the malfunctioning product to VMIC. VMIC will return an operational product to the customer within 72 hours of receipt provided VMIC has the product in stock. Customers should contact VMIC prior to returning products for repair to determine stocking status.

Category 2 (Fixed Price Repair) applies to products returned to VMIC for repair and subsequent return to the customer.

Return authorizations are required on all product repairs, and all purchase orders should refer to VMIC's Return Authorization Number which is assigned by VMIC's Customer Service Department.

5.4.2 Repair Pricing

Product exchange is fifty percent (50%) of the current list price. Fixed price repairs are performed at twenty-five percent (25%) of the current list price. Repair prices are not discountable.

(Repair prices are subject to change without notice).

5.4.3 Payment

Payment is due upon delivery or at VMIC's option, net thirty (30) days from the date of delivery. Payment should be made to:

VME Microsystems International Corporation
12090 South Memorial Parkway
Huntsville, Alabama 35803-3308
Attention: Accounts Receivable

VMIC allows a one (1) percent discount for payment made within ten (10) days of invoice date or a two (2) percent discount on payment made prior to shipment of order. This payment discount, however, does not apply to freight.

5.4.4 Shipping Charges

Shipping charges are the customer's responsibility, with the exception of warranty repairs, whereby VMIC will pay the return to customer shipping charges.

5.4.5 Shipping Instructions

The type of packaging used to ship the product depends on whether the product is shipped singly, in a chassis, or packaged with other boards. The shipper should carefully pack the product(s), using the same precautions listed in the "unpacking procedures". The user should utilize the same (or equivalent) protective packaging container for re-shipment as provided by VMIC. Approved ESD procedures are recommended when handling VMIC's products.

5.4.6 Warranty on Repairs

Products repaired by VMIC are warranted against defects in workmanship and material for a period of ninety (90) days from date of shipment to the customer for all products that were repaired out of warranty. See Standard Conditions of Sale for products repaired within the warranty.

5.4.7 Exclusions

Repair rates may not apply to products which have received unusual physical or electrical damage. In such cases, VMIC will provide an estimated price for product repair or replacement. The customer may then choose to have the product repaired at the estimated price, returned unrepaired at no charge, or replaced at VMIC's current list price.

APPENDIX A

ASSEMBLY DRAWINGS, PARTS LIST, AND SCHEMATIC

SCHEMATIC NOT AVAILABLE FROM VENDOR

SIGNATURES	DATE
DRAWN	
PROJ. ENG.	
ENG. MGR.	
PROD.	
Q.A.	

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12090 SO. MEM. PKWY.
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POWER SUPPLIES PS 7-33

SIZE	DWG NO.	REV.
B	0BPH5	

SCALE | SHEET

DOCUMENTATION EVALUATION FORM

VMIC welcomes your comments and suggestions.

Please return this form to:

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1-800-322-3616

Evaluation: Please rate the following areas on a scale of 1 to 5 (1 = Poor; 5 = Excellent).

DOCUMENT NO.: _____
REVISION DATE: _____

READABILITY	_____	ILLUSTRATIONS	_____
ORGANIZATION	_____	PROGRAMMING INFORMATION	_____
ACCURACY	_____	SPECIFICATIONS	_____
COMPLETENESS	_____	MAINTENANCE DIAGRAMS	_____

SPECIFIC PROBLEMS: **PAGE(s)**

( ) CLARIFICATION REQUIRED _____

( ) NOT ENOUGH INFORMATION GIVEN _____

( ) TYPOGRAPHICAL ERRORS _____

( ) TECHNICAL ERRORS (EXPLAIN): _____

DOCUMENT USE: (check all that apply)

( ) HARDWARE	( ) SOFTWARE	( ) PRODUCT EVALUATION
( ) OPERATION	( ) MAINTENANCE	( ) TRAINING

ADDITIONAL COMMENTS: _____

YOUR NAME: _____
TITLE: _____
COMPANY: _____
MAIL STOP: _____
STREET: _____
CITY, STATE, ZIP: _____
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