FSD PRODUCT SUPPORT DOCUMENTATION

SUPPORT PLAN
MICROSYSTEMS PRODUCTS

PMRP

Product Maintenance Reference Plan

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CSO SUPPORT PLAN

MICROSYSTEMS PRODUCTS

Author: Bob Kavinsky
Microsystems Product Support

APPROVALS

6/4/86
Bob Wozniak, Manager Date
Hardware Product Support

5/21/86
Bob Cossman, Manager Date
Tempe Operations

6/2/86
Lou Wilder, Director Date
Product Support

7/14/86 w/addendum
Dick Cook, Director Date
Training

6-18-86
Ray Pezzillo, Director Date
Logistics

Ron McClanahan, Vice President Date
Field Operations

6/10/86
Wes Thrash, Sr. Vice President Date
Customer Support Operation

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MICROSYSTEMS SUPPORT PLAN

1. INTRODUCTION

a. Purpose

The purpose of this support plan is to document the maintenance strategy for Motorola Microsystems equipment that is offered in a system configuration or as single board level products.

b. Scope

A product description of each system that can be supported by a maintenance agreement, or time and material on-site service, is described in Section 2.

Single board level product is offered as depot repair/exchange only. Refer to Section 7.

2. PRODUCT DESCRIPTION

a. VME/10

MC68010 based microcomputer; system control module; disk controller module; keyboard; CRT display unit; 5.25" floppy drive and 5, 15 or 40MB hard disk drives. These and optional support equipment are listed in Appendix A.

b. VMEsystem 1000

MC68010 or MC68020 based microcomputer; microprocessor module; system controller; disk controller; memory module(s); I/O transistion module(s); 5.25" floppy drive and 40MB or 70MB hard disk drive. These and optional support equipment are listed in Appendix B.

c. VMC 68/2

MC68000 based monocomputer; universal disk controller; 256K DRAM module; 4 or 8 slot chassis and 16MB mass storage cartridge/fixed disk unit. These and optional support equipment are listed in Appendix C.

d. EXORmacs

MC68000 microprocessor development host; debug module; MPU/MMU module; 512KB RAM module; universal intelligent peripheral controller; disk interface module and EXORterm 155 display console. These and optional support equipment are listed in Appendix D.

e. EXORset

MC6809 based development system; controller board; floppy disk controller; two 5.25" floppy disk drives; 9 or 12 inch CRT monitor and keyboard. These and optional support equipment are listed in Appendix E.

f. HDS-200

MC6809 based development system; family interface module; mono-board microcomputer; and appropriate emulator module. These and optional support equipment are listed in Appendix F.

g. HDS-300

MC68000 based development system; control module; family interface module; 5.25" floppy disk drive and appropriate emulator module. These and optional support equipment are listed in Appendix G.

h. HDS-400

MC68000 based development system; control module; family interface module and appropriate emulator module. These and optional support equipment are listed in Appendix H.

3. ON-SITE MAINTENANCE STRATEGY

a. Objective

The objective is to keep the customer down time and CSO's cost to a minimum. This can be accomplished by minimizing repair time and eliminating unnecessary service calls.

b. Philosophy

Based on the wide range of products, the maintenance strategy will be unit swap. Diagnostics will be provided to isolate the failure to either a board or a peripheral device.

If on-site, and failure is found not to be Microsystems related, the customer will be charged for labor at the then current labor rate.

4. ON-SITE SERVICE CATEGORIES

Installation
Warranty
Maintenance Agreement
Time and Material
Relocation

a. Installation

Initial installation service for equipment under warranty is provided on a time and travel expense basis.

Installation services include;

- Interconnection of Microsystems Products.
- Perform all required electronic and mechanical adjustments.
- Perform warranty repairs as required.
- Execute standard acceptance tests.

b. Warranty

Microsystems products are warranted against defects in materials and workmanship for a period of ninety (90) days, beginning on the date of purchase. Customers must mail the warranty registration card received with the equipment to the Customer Support Center and must maintain proof of purchase.

Products repaired, exchanged or purchased through Dallas Logistics Center are also warranted ninety (90) days. Extended warranties covering from ninety days to five years may also be purchased through the Dallas Logistics Center.

Customers may choose one of the following options;

1. Request on-site service and pay time and travel surcharges.
2. Ship defective unit prepaid to Dallas Logistics Center for warranty exchange and/or repair

c. Maintenance Agreement

A maintenance agreement is offerred for one year on equipment qualified under original system type category. Maintenance charge entitles the customer to remedial maintenance services between the hours of 0800 and 1700, local time, Monday through Friday, exclusive of Motorola Computer System holidays. Service requests outside of these hours will be provided on a time and travel basis.

Maintenance agreements are priced for locations within a fifty (50) mile radius of a designated service center. A zone surcharge is applicable for calls located beyond those in the basic agreement.

PREVENT MAINT

DIAGNOSTICS

CUSTOMER REPAIR

PHONE SUPPORT

FMK'S & UPGRADE

d. Time and Material

Customers not covered under warranty or a maintenance agreement may request on-site service. Best effort will be provided from the nearest service center. Motorola Computer Systems does not guarantee response time or parts availability. All labor, travel expense and replacement parts will be billed to the customer at the then current rates.

e. Relocation

Relocation services are available on a time and material basis and will include dismantling and preparation for shipment at the old location and/or installation at the new location. Actual shipping arrangements are the customer's responsibility and all repairs as a result of a relocation are billable on a time and material basis.

5. PREVENTIVE MAINTENANCE

The 96MB hard disk drive on the EXORmacs requires a semi-annual absolute air filter change. This is currently the only preventive maintenance function being offerred.

6. DIAGNOSTICS

Diagnostic categories are:

a. Power-up self-test or confidence test.
b. Disk resident on the operating system.
c. Off-line diagnostic on diskettes that can be booted and invoked via CRT console.
d. Firmware EPROMs with diagnostics that are invoked via CRT console or by selected switch settings on software readable DIP swithes.
e. Floppy diskettes - Reference PMRB MB-161, System 1131

7. CUSTOMER REPAIR STRATEGY

a. Objective

The objective is to have the customer install and maintain the equipment. When a unit fails the customer will ship the unit to logistics at his own expense. Unit will be repaired and returned to customer within thirty (30) days.

Repair strategy is designed for customers that purchase spare units. An alternative is the module exchange program, which provides ten (10) days or less turnaround time at repair pricing plus a surcharge.

b. Philosophy

The maintenance strategy is to provide the customer with diagnostics that will isolate the failing unit. CSO Product Support will provide phone assistance.

c. Repair

The customer will deinstall and ship the defective unit to Dallas Logistics for repair, after securing a return authorization number.

8. TELEPHONE TECHNICAL SUPPORT

a. Objective

The objective is for Product Support personnel to assist the customer in troubleshooting problems and perhaps eliminating unnecessary on-site service calls.

b. Philosophy

Product Support will provide telephone assistance to determine and help diagnose what is causing a suspected hardware failure.

Assistance can be provided by:

- Help in running diagnostics and understanding failure codes.
- Confirming proper equipment configurations; jumpers, switches; firmware, cabling and other connections.
- Having information that was omitted from documentation.
- Help in clarifying misunderstanding of the documentation.
- Interface with design engineers for new or unusual problems.

c. Availability

Technical assistance is available from CSO Product Support week days from 0700 to 1700, Mountain Standard Time.

9. FIELD MODIFICATIONS AND UPGRADES

Equipment modifications or upgrades will normally not be performed in the field. Units returned through the regular repair channels will be modified or upgraded by the Tempe Depot Repair Center.

To maintain the warranty condition of some installations and upgrades these special pieces of equipment must be installed by Motorola Computer Systems. The special equipment is listed in Appendix I.

TRAINING

DOCUMENTATION

LOGISTICS

ADDENDUM

APPENDIX A - I

10. TRAINING

a. Objective

The objective of the Field Training Center is the introduction of system concepts for the field engineers assigned the responsibility to maintain Microsystems equipment. With the multitude of options and equipment available to the customer, training can give a basic understanding of system functionality.

b. Scope

Upon successful completion of the training course, the FE will be able to install and run diagnostics on all systems covered in this Support Plan. The FE will be familiar with the documentation and capable to run all diagnostics, including jumper strapping, and analyze failure indications.

c. Course requirements

All the system equipment described in Section 2 will be available in a lab environment for practical hands-on experience. Classes are scheduled a minimum of six times a year at the Dallas Field Training Center.

11. DOCUMENTATION

Customer user manuals are available on-site.

PMRB's and other pertinent information provided by the Product Support Department are distributed throughout the field organization on both paper and microfiche.

12. LOGISTICS

Spare parts are stocked at the field service centers to support customers with maintenance agreements.

Spares at the Dallas Logistics Center are available to the field offices who support on-site repairs and to customers who perform their own repairs. Customers may purchase replacements, exchange defective product or have a faulty product repaired through the Dallas Logistics Center.

ADDENDUM

CSO Support Plan

Microsystems Products

SECTION 10. Training

c. Classes will be scheduled to meet the demand. In 1986 six classes are scheduled. However, in 1987, we might schedule fewer, or more as required.

b. The scope of training is now similar to that described. However, the actual products included in the course, and the specific training is under review. The training could well be different than listed here.

APPENDIX A

VME/ 10 Systems

M68K101-1	VME/10 w/5MB Disk
M68K102B1	VME/10 w/15MB Disk
M68K102C1	VME/10 w/40MB Disk
M68K102D1	VME/10 w/40MB Disk and Color Monitor

VME Modules

MVME200	64K Byte RAM Module
MVME201	256K Byte RAM Module
MVME202	512K Byte RAM Module
MVME222-1	1 MEG Byte RAM Module
MVME222-2	2 MEG Byte RAM Module

I/O Modules

MVME330	Ethernet Lan Controller
MVME400	Dual Port RS232C
MVME410	16-Bit Parallel I/O

APPENDIX B

VMEsystem 1000

SYS1121UY221	Model numbers define the actual system
SYS1121UY321	configuration from selected equipment
SYS1131UY231	listed below.
SYS1131VY231	
SYS1131UY331	
SYS1131UY341	
SYS1131VY331	

Processor Modules

MVME121	10Mhz MC68010
MVME131	12.5 Mhz MC68020

Memory Modules

MVME202	512K Byte RAM Module
MVME204-1	1024K Byte RAM Module
MVME204-2	2048K Byte RAM Module

System Controller Module

MVME050	System Controller

Disk Controller Module

MVME320A-1	Wini/Floppy Controller

I/O Transistion Modules

MVME701A	For MVME050
MVME702A	For MVME32A-1
MVME707	For MVME131

Disk Drive Modules

MVME822	5 1/4 inch Floppy and 40MB Wini
MVME823	5 1/4 inch Floppy and 70MB Wini

APPENDIX C

VMC 68/2 Systems

MVME682-114	VMC 68/2 w/4 Slot Chassis
MVME682-118	VMC 68/2 w/8 Slot Chassis
MVME682-114H	VMC 68/2 w/4 Slot Chassis
MVME682-118H	VMC 68/2 w/8 Slot Chassis

Disk Drives

MLD1-16	16MB Hard Disk
MLD1-50	50MB Hard Disk
M68FDU1102E	EXORdisk III Floppy
M68KHDE16-1	EXORmacs 16MB Hard Disk
M68KHDE32-1	32MB Hard Disk
M68KHDE50-1	50MB Hard Disk
M68KHDE96-1	96MB Hard Disk

Intelligent Terminals

M68SXD10155	EXORterm 155
M68SXD10155A	EXORterm 155A

Printer

M68K703P1	Centronics 703

Monoboard Microcomputers

M68KVM01A1	16-Bit w/32KB RAM
M68KVM01A2	16-Bit w/64KB RAM
M68KVM02-2	16-Bit w/128KB RAM
M68KVM03-1	16-Bit w/1 MEG RAM

Memory Modules

M68KVM10-3	128KB RAM
M68KVM11-1	256KB RAM
M68KVM11-2	512KB RAM
M68KVM12	1 MEG RAM
M68KVM12-2	4 MEG RAM

APPENDIX C (cont'd)

Floppy Disk Controller Modules

M68KVM20	Intelligent Floppy Controller
M68KFD1100	EXORdisk II 512KB Floppy
M68SFDU1102E	EXORdisk III 1 MB Floppy

Universal Disk Controller Module

M68KVM21	Intelligent Disk Controller

Multi-Channel Communications Modules

M68KVM30	Multi-Channel Comm Module
M68KVM33	Ethernet Lan Controller

Universal Intelligent Peripheral Controller

M68KVM60	UIPC

Memory I/O and Clock Modules

M68KVM80-1	w/o RAM
M68KVM80-4	w/128KB RAM

APPENDIX D

EXORmacs System

M68KMACS	MC68000 EXORmacs Development System

Disk Drives

M68KFD1102	1 MB DSSD Floppy Disk
M68KHDD16-1	16 MB Hard Disk
M68KHDD32-1	32 MB Hard Disk
M68KHDD50-1	50 MB Hard Disk
M68KHDD96-1	96 MB Hard Disk

Expansion Disk Drives

M68SFDU1102E	EXORdisk IIIE
M68KHDE16-1	16 MB Hard Disk
M68KHDE32-1	32 MB Hard Disk
M68KHDE50-1	50 MB Hard Disk
M68KHDE96-1	96 MB Hard Disk

Memory Modules

M68KVM10-3	128K Byte RAM
M68KVM11-1	256K Byte RAM
M68KVM11-2	512K Byte RAM
M68KVM12	1 MEG Byte RAM
M68KVM12-2	4 MEG Byte RAM

Multi-Channel Communications Modules

M68KVM30	Multi-Channel Comm Module
M68KVM33	Ethernet Lan Controller
M68KMCCM	Multi-Channel Comm Module w/I/O Panel

Data Link Controller

M68KHDLC	56K Byte DLC

APPENDIX D (cont'd)

Intelligent Terminals

M68SXD10100	EXORterm 100
M68SXD10150	EXORterm 150
M68SXD10155	EXORterm 155
M68SXD10155A	EXORterm 155A

Printer

M68K703LP1	Centronics 703

Disk Drive Upgrades (Includes Disk Controller)

M68KHDS16-1	16 MB Hard Disk
M68KHDS32-1	32 MB Hard Disk
M68KHDS50-1	50 MB Hard Disk
M68KHDS96-1	96 MB Hard Disk

M68000 Remote Development Stations

M68KRDS1	Remote Station w/USE
M68KRDS2	Remote Station w/o USE

APPENDIX E

EXORset 110 w/HDS-200

M68SET-200	EXORset 110 w/HDS-200 (See Appendix F for HDS-200 Equipment)

EXORset Systems

M6809SET110	EXORset 110
M68SETDS351	EXORset 35-2
M68SETDS351N	EXORset 35-1

Printers

MPRINT702SET	Centronics 702
MPRINT703SET	Centronics 703

Disk Drive Expansion

M68DSK3	EXORdisk III Floppy

APPENDIX F

HDS-200 Control Station

M68HDS201	HDS-200 Control Station

Emulator Modules

M6805P234HM	MC6805P2/P4 and MC68705P3
M6805RU23HM	MC6805R2/R3/U2 and MC68705R3/U3
M6805S2HM	MC6805S2
M6805T2HM	MC6805T2
M146805E2HM	MC146805E2
M146805F2HM	MC146805F2
M146805G2HM	MC146805G2
M68HC05C4HM	MC68HC05C4

APPENDIX G

HDS-300 Control Station

M68HDS300	HDS-300 Control Station

Emulator Modules

M6801HM3	MC6801, MC6801U4, MC6803, MC6803U4, MC68701 and MC68701U4
M6809HM3	MC6809/E
M68010HM3	MC68010
M68020HM3	MC68020
M68HC11HM3	MC68HC11

Memory Expansion Modules

M68HDS3EMM-1	64K Byte RAM
M68HDS3EMM-2	128K Byte RAM
M68HDS3EMM-3	256K Byte RAM

APPENDIX H

HDS-400 Control Stations

M68KHD400	HDS-400 Control Station - DLC
M68KDS400A	HDS-400 Control Station - RS232C-VME/10

Interface Modules

M68KDS16FB	16-Bit Family Interface
M68KVM02-3	128K Byte RAM

Emulator Modules

M68000HDS4	MC68000
M68008HDS4-8	MC68008
M68010HDS4-8	MC68010
M68000HDS4F	MC68000
M68000HDS4H	MC68000
M68000HDS4L	MC68000

Memory Expansion Modules

M68KHDS4EMM1	64K Byte RAM
M68KHDS4EMM2	128K Byte RAM
M68KHDS4EMM3	256K Byte RAM

Bus State Analyzers

M68BSAC	Real Time Control Module
M68BSA1	MC68000/68010/68451 Module
M68BSA1-1	MC68000/68010/68451 Module
M68BSA2	MC6800/6809/6829 Analyzer Module
M68BSA3	MC68008 Module
M68BSA4	MC68120/MC6801 Analyzer Module
M68BSA5	VERSAbus State Analyzer Module
M68BSA6	EXORbus State Analyzer Module
M68BSACE	Bus State Analyzer Module

APPENDIX I

Special Equipment Installation

The following devices must be installed by Motorola Computer Systems in order to keep the warranty in effect.

M68KHDS400	HDS-400 Control Station
M68KHDSDLC	56K Byte DLC