

MVME712M/D1

MVME712M
Transition Module and
MVME147P2 Adapter Board
User's Manual



MVME712M
TRANSITION MODULE
AND
MVME147P2 ADAPTER BOARD
USER'S MANUAL
(MVME712M/D1)

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PREFACE

This manual provides general information, hardware preparation, installation instructions, and support information for the MVME712M Transition Module and the P2 Adapter Board.

The modules are used as the interface between MVME147 family of modules and the peripheral devices. A P2 adapter module and a cable is supplied for interconnection between the MVME712M and the MVME147 family.

This manual is intended for anyone who wants to design OEM systems, supply additional capability to an existing compatible system, or in a lab environment for experimental purposes.

A basic knowledge of computers and digital logic is assumed.

To use this manual, you should be familiar with the publications listed in the *Related Documentation* paragraph in Chapter 1 of this manual.

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SAFETY SUMMARY

SAFETY DEPENDS ON YOU

The following general safety precautions must be observed during all phases of operation, service, and repair of this equipment. 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 equipment. Motorola Inc. assumes no liability for the customer's failure to comply with these requirements. The safety precautions listed below represent warnings of certain dangers of which we are aware. You, as the user of the product, should follow these warnings and all other safety precautions necessary for the safe operation of the equipment in your operating environment.

GROUND THE INSTRUMENT.

To minimize shock hazard, the equipment chassis and enclosure must be connected to an electrical ground. The equipment is supplied with a three-conductor ac power cable. 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. The power jack and mating plug of the power cable meet International Electrotechnical Commission (IEC) safety standards.

DO NOT OPERATE IN AN EXPLOSIVE ATMOSPHERE.

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

KEEP AWAY FROM LIVE CIRCUITS.

Operating personnel must not remove equipment covers. Only Factory Authorized Service Personnel or other qualified maintenance personnel may remove equipment covers for internal subassembly or component replacement or any internal adjustment. 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.

USE CAUTION WHEN EXPOSING OR HANDLING THE CRT.

Breakage of the Cathode-Ray Tube (CRT) causes a high-velocity scattering of glass fragments (implosion). To prevent CRT implosion, avoid rough handling or jarring of the equipment. Handling of the CRT should be done only by qualified maintenance personnel using approved safety mask and gloves.

DO NOT SUBSTITUTE PARTS OR MODIFY EQUIPMENT.

Because of the danger of introducing additional hazards, do not install substitute parts or perform any unauthorized modification of the equipment. Contact Motorola Field Service Division for service and repair to ensure that safety features are maintained.

DANGEROUS PROCEDURE WARNINGS.

Warnings, such as the example below, precede potentially dangerous procedures throughout this manual. Instructions contained in the warnings must be followed. You should also employ all other safety precautions which you deem necessary for the operation of the equipment in your operating environment.

WARNING

Dangerous voltages, capable of causing death, are present in this equipment. Use extreme caution when handling, testing, and adjusting.

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CHAPTER 1 – GENERAL INFORMATION

INTRODUCTION

This manual provides general information, hardware preparation, installation instructions, and support information for the MVME712M Transition Module and the MVME147P2 Adapter Board.

The MVME712M is used as the interface between MVME147 family modules and the peripheral devices. A P2 adapter module and cables are supplied for interconnection between the MVME712M and the MVME147 family.

FEATURES

The features of the MVME712M include:

- Four 25-pin multiprotocol RS-232C serial ports (through P2 adapter).
- One independent printer port (through P2 adapter).
- Small Computer Systems Interface (SCSI) shielded connector bus interface (through P2 adapter) for connection to internal and external devices.
- Green LED on module to indicate terminator power.
- Yellow LED on module to indicate transceiver power.
- SCSI terminating resistors mounted in sockets for *end of cable* or *middle of cable* configuration.
- Modem connection on module.

The features of the MVME147P2 Adapter Board include:

- 50-pin connector permits SCSI cable connection to other SCSI devices and/or to MVME712M through a flat ribbon cable.
- SCSI terminating resistors mounted in sockets for *end of cable* or *middle of cable* configuration.
- Terminator power is developed on the P2 adapter from the +5 Vdc on connector P2 and is fused (1 amp.) on the P2 adapter.
- A 64-pin connector interfaces the RS-232C ports, printer port, SCSI, and Ethernet signals to the MVME712M.

GENERAL INFORMATION

SPECIFICATIONS

The MVME712M specifications are given in Table 1-1.

TABLE 1-1. MVME712M Specifications

CHARACTERISTICS	SPECIFICATIONS
Power requirements	+5 Vdc, 281 mA max. (255 mA typical) +12 Vdc -12 Vdc
I/O ports	
Serial	Four multiprotocol serial port (connected through P2 adapter)
Printer	Centronics printer port (connected through P2 adapter)
Operating temperature	0 degrees to 55 degrees C at point of entry of forced air (approximately 5 CFM)
Storage temperature	-40 degrees to 85 degrees C
Relative humidity	5% to 90% (non-condensing)
Physical characteristics (excluding front panel)	
Height	9.187 inches (233.35 mm)
Depth	3.200 inches (80.0 mm)
Thickness	0.063 inches (1.6 mm)

Cooling Requirements

Motorola VMEmodules are specified, designed, and tested to operate reliably with an incoming air temperature range from 0 degrees C to 55 degrees C (32 degrees F to 131 degrees F) with forced air cooling. Temperature qualification is performed in a standard Motorola VMEsystem 1000 chassis. Twenty-five watt load boards are inserted in the two card slots, one on each side, adjacent to the board under test to simulate a high power density system configuration. An assembly of three axial fans, rated at 71 CFM per fan,

is placed directly under the MVME card cage. The incoming air temperature is measured between the fan assembly and the card cage where the incoming airstream first encounters the module under test. Test software is executed as the module is subjected to ambient temperature variations. Case temperatures of critical, high power density integrated circuits are monitored to ensure component vendors specifications are not exceeded.

While the exact amount of airflow required for cooling depends on the ambient air temperature and the type, number, and location of boards and other heat sources, adequate cooling can usually be achieved with 5 CFM flowing over the module. Less air flow is required to cool the module in environments having lower maximum ambients. Under more favorable thermal conditions it may be possible to operate the module reliably at higher than 55 degrees C with increased air flow. It is important to note that there are several factors, in addition to the rated CFM of the air mover, which determine the actual volume of air flowing over a module.

FCC Compliance

This VME module (MVME712M) was tested in an FCC-compliant chassis, and meets the requirements for Class A equipment. FCC compliance was achieved under the following conditions:

- a. Shielded cables on all external I/O ports.
- b. Cable shields connected to earth ground via metal shell connectors bonded to a conductive module front panel.
- c. Conductive chassis rails connected to earth ground. This provides the path for connecting shields to earth ground.
- d. Front panels screws properly tightened.

For minimum RF emissions, it is essential that the conditions above be implemented; failure to do so could compromise the FCC compliance of the equipment containing the modules.

GENERAL DESCRIPTION

The MVME712M is the I/O transition module for the MVME147 family. The P2 adapter assembly routes the I/O signals and grounds from the P2 connector on the backplane at the MVME147 family module to the MVME712M. The MVME712M routes the signals to the appropriate industry standard connectors on its front panel. In addition, the MVME712M routes the RS-232C port 2 signals to connector J20 on the module for connection to an internal modem. Connector J21 is provided for connection to the chassis backplane to supply power through connector J20 to the modem.

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The MVME712M has four DB-25 connectors for the serial ports, one 36-pin connector for the printer port, one 50-pin connector for the SCSI port, and one DB-15 connector for the Ethernet port. The serial ports may be configured for use as DTE or DCE through jumper arrangements on the MVME712M.

RELATED DOCUMENTATION

The following manual is applicable to the MVME147. If this manual is not shipped with this product, it may be purchased from the Motorola Literature Distribution Center, 616 West 24th Street, Tempe, AZ 85282; telephone (602) 994-6561.

DOCUMENT TITLE	MOTOROLA PUBLICATION NUMBER
MVME147 MPU VMEmodule User's Manual	MVME147

NOTE: Although not shown in the above list, each Motorola MCD manual publication number is suffixed with characters which represent the revision level of the document, such as "/D2" (the second revision of a manual); a supplement bears the same number as the manual but has a suffix such as "/A1" (the first supplement to the manual).

MANUAL TERMINOLOGY

Unless otherwise specified, all address references are in hexadecimal throughout this manual.

An asterisk (*) following the signal name for signals which are level significant denotes that the signal is true or valid when the signal is low.

An asterisk (*) following the signal name for signals which are edge significant denotes that the actions initiated by that signal occur on high to low transition.

CHAPTER 2 – HARDWARE PREPARATION AND INSTALLATION INSTRUCTIONS

INTRODUCTION

This chapter provides unpacking instructions, hardware preparation, and installation instructions for the MVME712M and P2 adapter.

UNPACKING INSTRUCTIONS

NOTE

If the carton is damaged upon receipt, request carrier's agent be present during unpacking/inspection of equipment.

Unpack equipment from shipping carton. Refer to packing list and verify that all items are present. Save packing material for storing and reshipping of equipment.

MVME712M MODULE PREPARATION

The location of the headers, LEDs, terminators, and connectors for the MVME712M is illustrated in Figure 2-1. The module has been factory tested and is shipped with factory-installed jumper configurations that are shown in the following paragraphs with each header description. The module is operational with the factory-installed jumpers. The module is configured to provide the system functions required for a VMEbus system. It is necessary to make changes in the jumper arrangements for the following conditions:

- DTE/DCE configuration select (J1, J11, J13, J14, J16-J19)
- Serial port 4 clock configuration select (J15)

DTE/DCE Configuration Select Headers (J1, J11, J13, J14, J16–J19)

Serial ports 1 through 4 can be configured as a modem (DCE) for connection to terminal or configured as a terminal (DTE) for connection to modem. The MVME712M is shipped with the ports configured for DTE operation. Configuration of each port is accomplished by positioning jumpers on one of two headers for each port. Headers J1/J11 configure port 1. Headers J16/J17 configure port 2. Headers J13/J14 configure port 3. Headers J18/J19 configure port 4.

Serial Port 1 DCE Configuration

Headers J1 and J11 may be configured for port 1 DCE (to terminal) operation as shown below. The schematic representation of this configuration is shown in Figure 2-2.

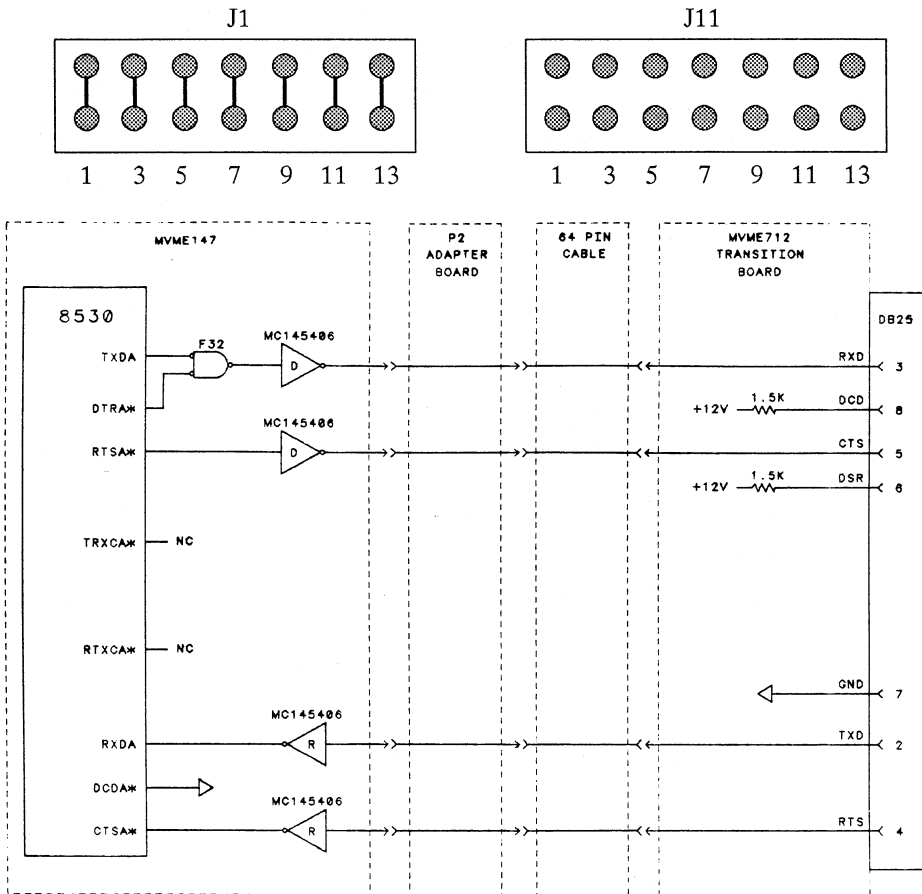


FIGURE 2-2. Serial Port 1 Configured as DCE

HARDWARE PREPARATION

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Serial Port 1 DTE Configuration

Headers J1 and J11 should be configured for port 1 DTE (to modem) operation as shown below. The schematic representation of this configuration is shown in Figure 2-3.

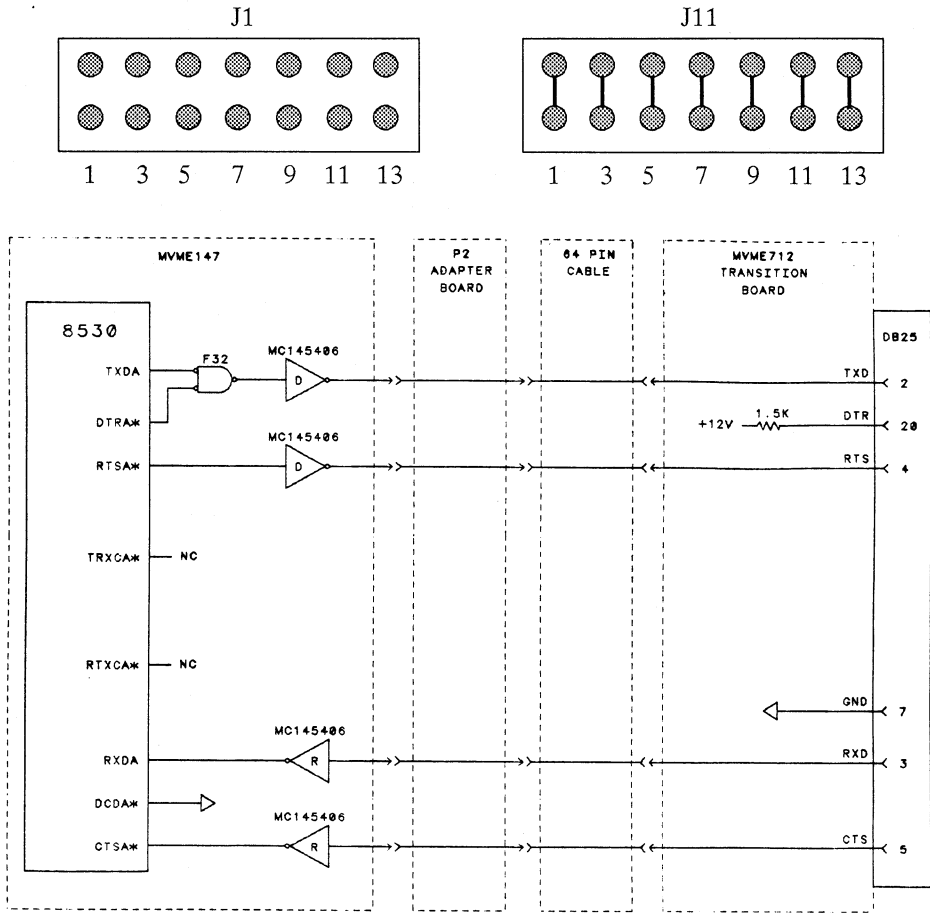


FIGURE 2-3. Serial Port 1 Configured as DTE

Serial Port 2 DCE Configuration

Headers J16 and J17 (port 2) should be configured for DCE (to terminal) operation as shown below. The schematic representation of this configuration is shown in Figure 2-4.

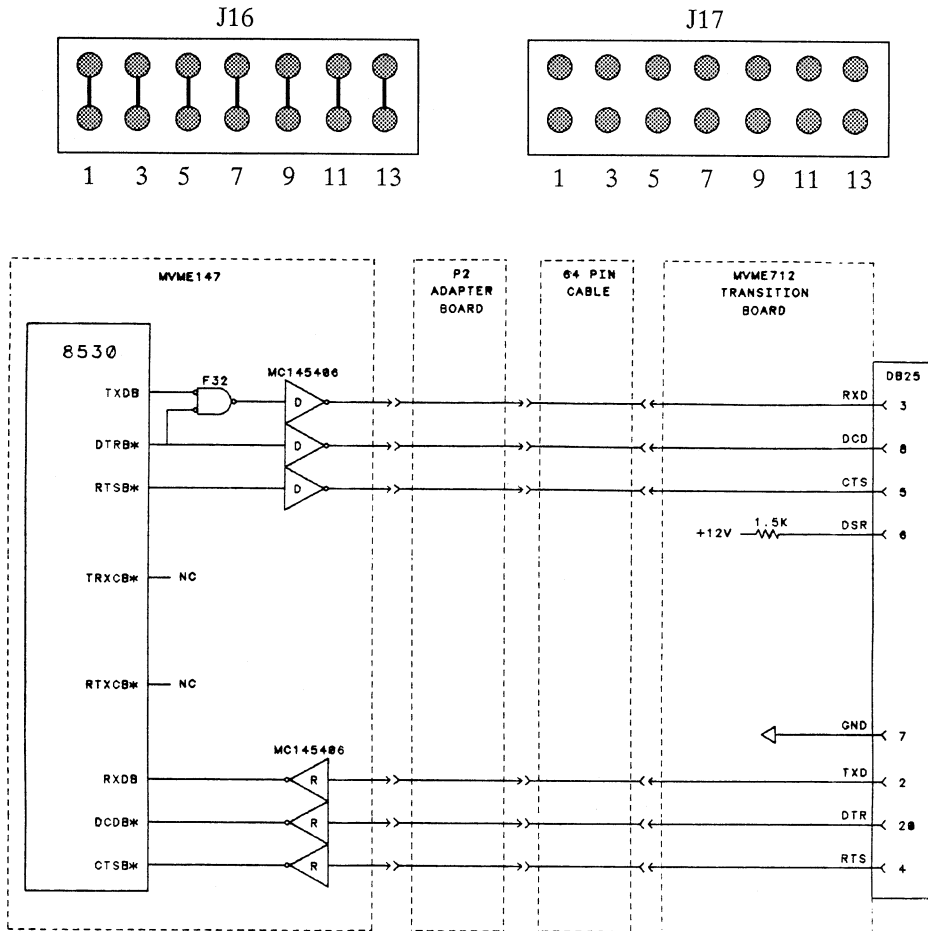


FIGURE 2-4. Serial Port 2 Configured as DCE

HARDWARE PREPARATION

2

Serial Port 2 DTE Configuration

Headers J16 and J17 (port 2) should be configured for DTE (to modem) operation as shown below. The schematic representation of this configuration is shown in Figure 2-5.

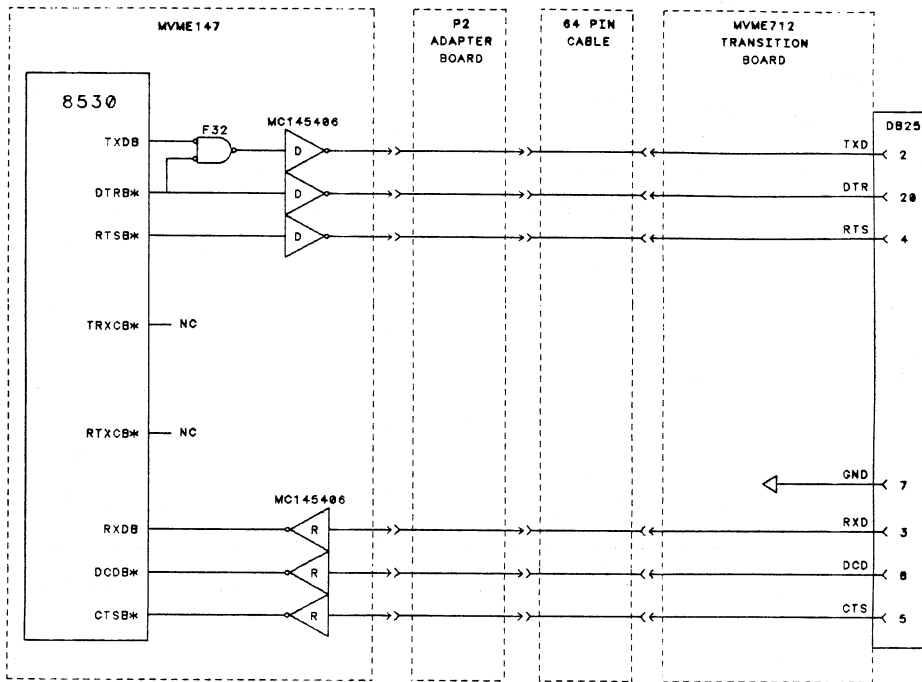
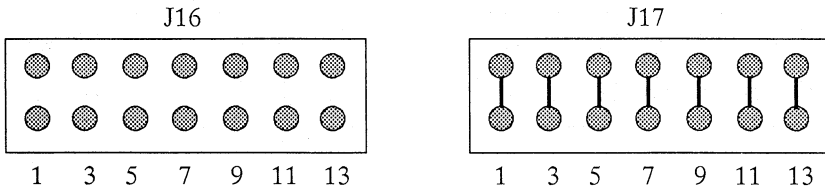


FIGURE 2-5. Serial Port 2 Configured as DTE

Serial Port 3 DCE Configuration

Headers J13 and J14 (port 3) should be configured for DCE (to terminal) operation as shown below. The schematic representation of this configuration is shown in Figure 2-6.

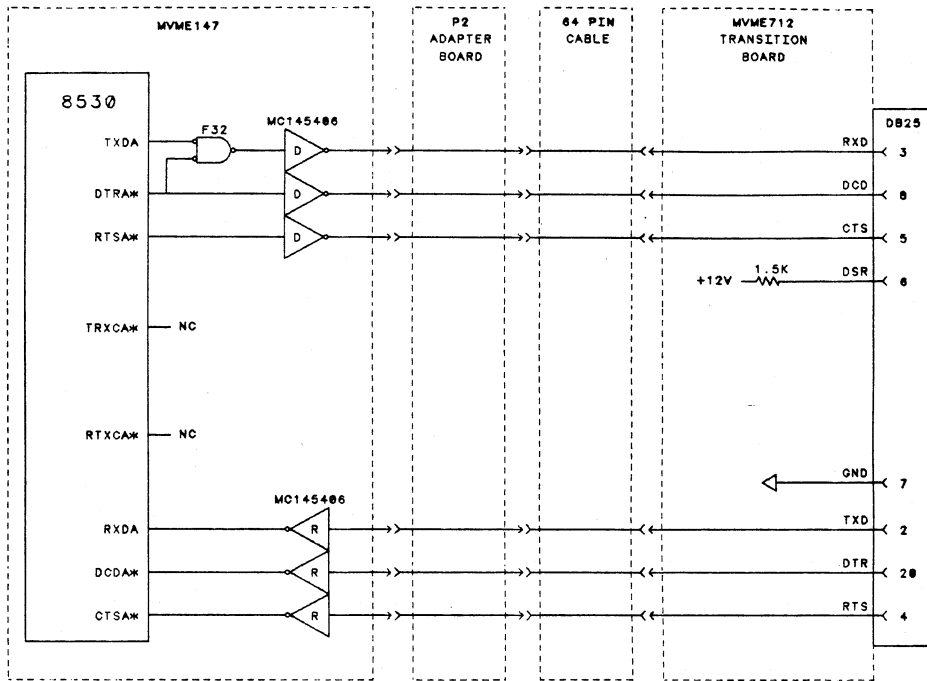
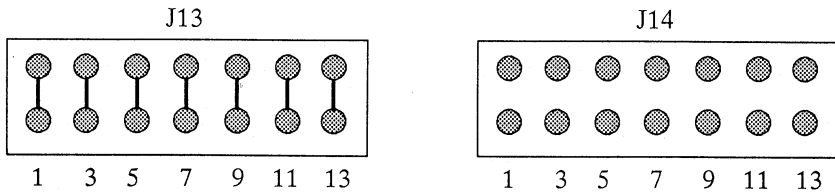


FIGURE 2-6. Serial Port 3 Configured as DCE

HARDWARE PREPARATION

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Serial Port 3 DTE Configuration

Headers J13 and J14 (port 3) should be configured for DTE (to modem) operation as shown below. The schematic representation of this configuration is shown in Figure 2-7.

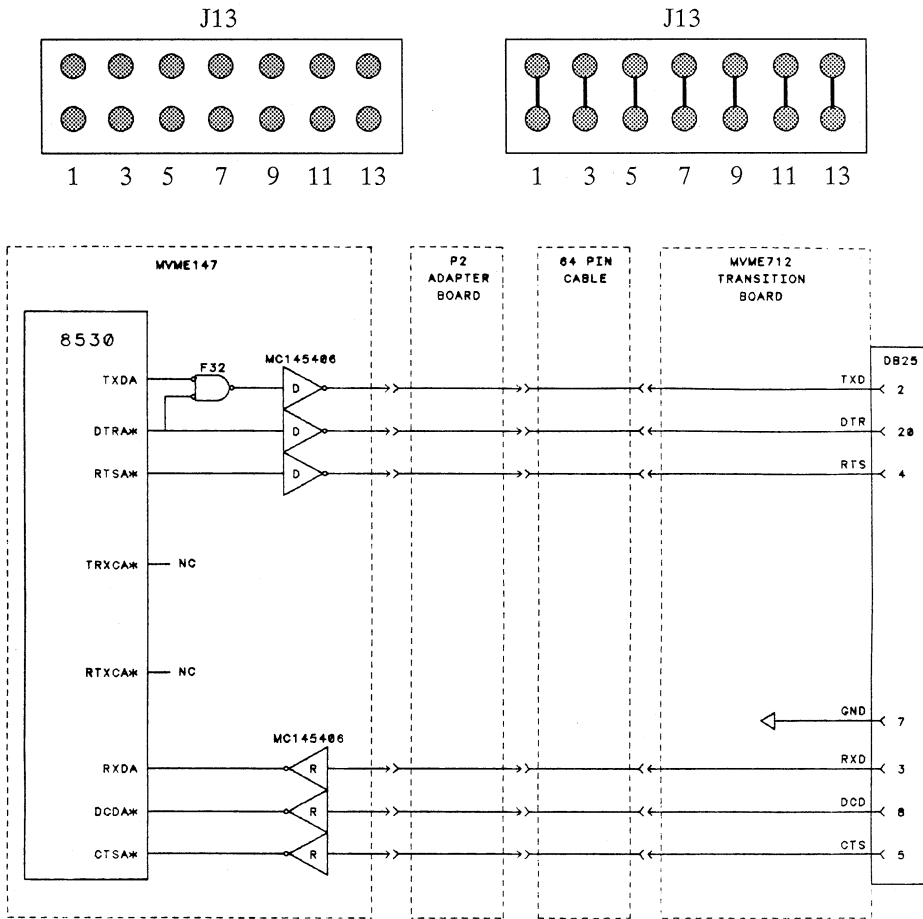


FIGURE 2-7. Serial Port 3 Configured as DTE

Serial Port 4 DCE Configuration

Headers J18 and J19 should be configured for port 4 DCE (to terminal) operation as shown below. The schematic representation of this configuration is shown in Figure 2-8.

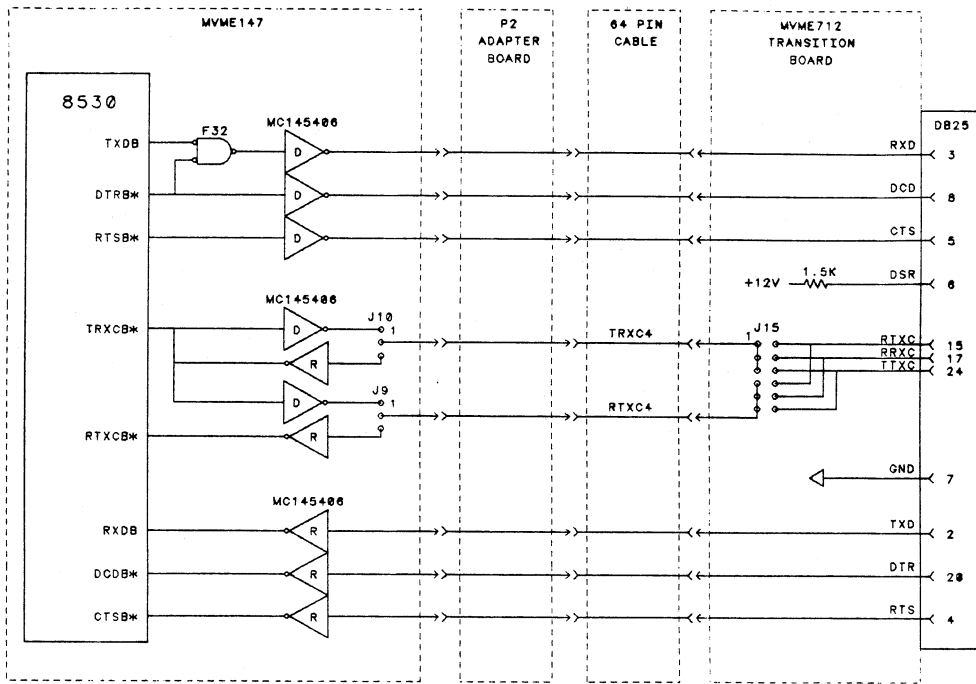
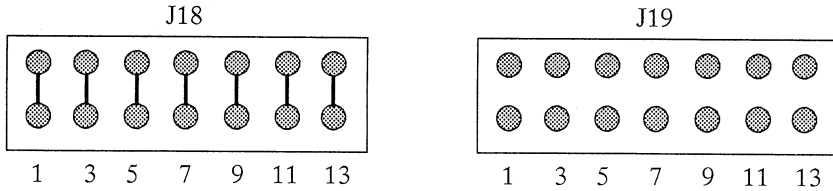


FIGURE 2-8. Serial Port 4 Configured as DCE

HARDWARE PREPARATION

Serial Port 4 DTE Configuration

Headers J18 and J19 should be configured for port 4 DTE (to modem) operation as shown below. The schematic representation of this configuration is shown in Figure 2-9.

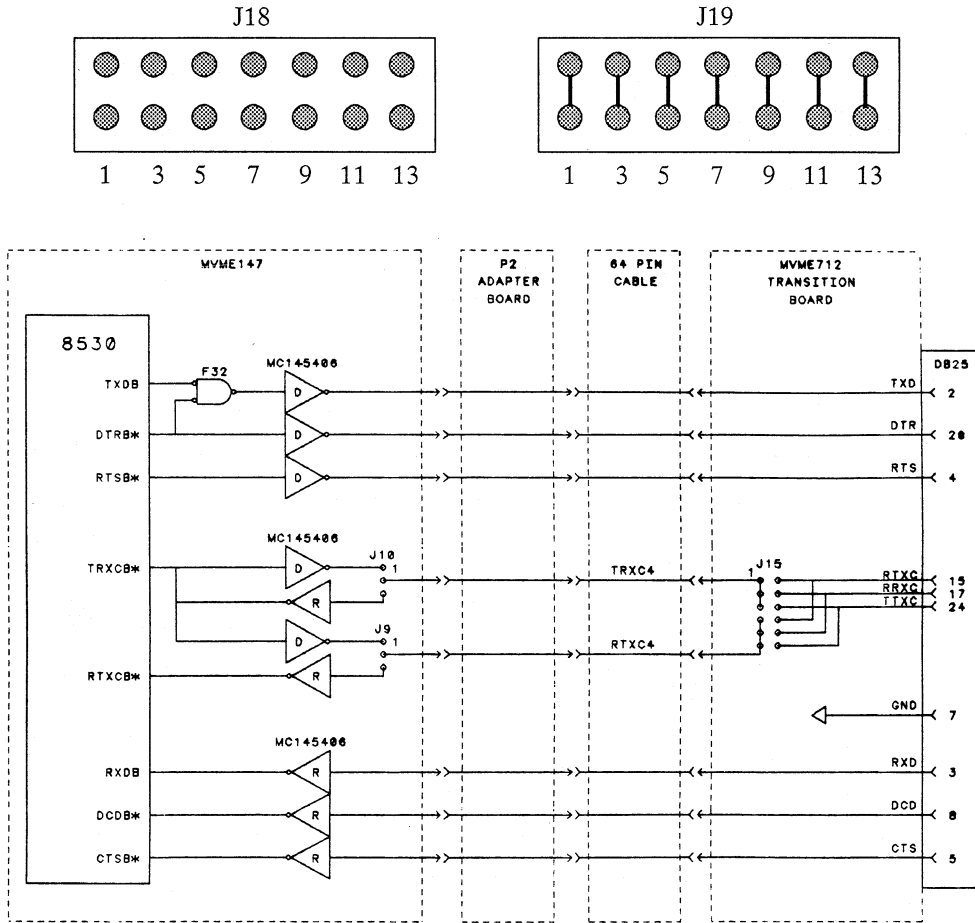
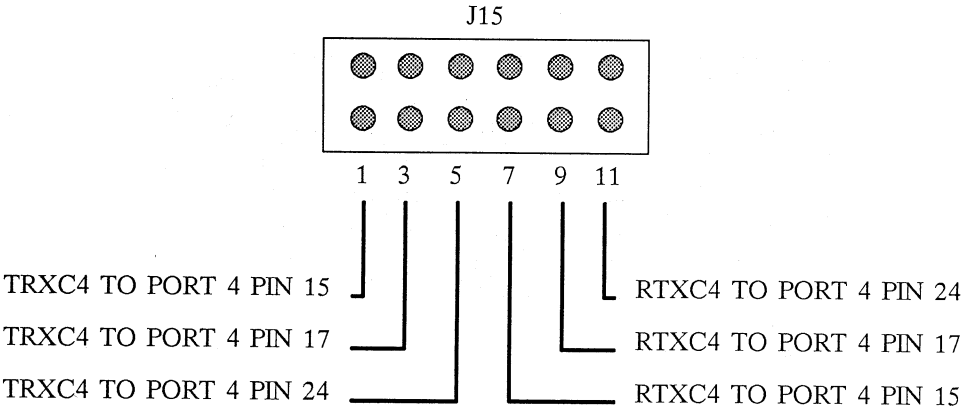


FIGURE 2-9. Serial Port 4 Configured as DTE

Serial Port 4 Clock Configuration Select Header (J15)

Serial port 4 can be configured to use clock signals by the TRXC4 and RTXC4 signal lines. Part of the configuration must be done with headers J9 and J10 on the MVME147. Header J15 configurations of the clock lines are shown below. The module is shipped without clock lines connected. For more information see Figure 2-9.



SCSI Termination

The user must ensure that the SCSI bus is terminated properly. The P2 adapter and the MVME712M module have sockets for terminating the SCSI lines. Both the P2 adapter and the MVME712M use three 8-pin SIP resistors. Refer to the installation instructions for use of the terminators.

P2 ADAPTER BOARD PREPARATION

Preparation of the P2 adapter consists of removing or replacing the terminating resistors for SCSI. The location of the resistors, fuse, and connectors is illustrated in Figure 2-10. Refer to the installation instructions for use of the terminators.

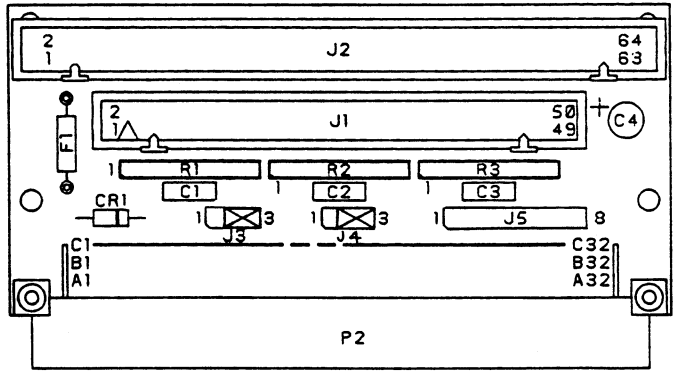


FIGURE 2-10. P2 Adapter Connector Locations

INSTALLATION INSTRUCTIONS

Installation of the MVME712M and the P2 adapter is presented in the following paragraphs and illustrations. The basic procedure for installation of all modules is as follows:

- a. Turn all equipment power OFF and disconnect power cable from ac power source.

CAUTION

CONNECTING MODULES WHILE POWER IS APPLIED MAY RESULT IN DAMAGE TO COMPONENTS ON THE MODULE.

WARNING

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

- b. Remove chassis cover as instructed in the equipment user's manual.
- c. Remove the filler panel(s) from the appropriate card slot(s) at the rear of the chassis (if the chassis has a rear card cage). Other modules in the unit may have to be moved to allow space for the cables connected to the P2 adapter and the MVME712M.

MVME712M Module Installation

The MVME712M can be connected in different configurations. These different configurations are listed below. To install the MVME712M in the system, proceed as follows:

Configuration A – Internal SCSI Devices Only

If SCSI devices are to be attached internal to the user system, proceed as follows and see Figure 2-11.

- a. The MVME147 is at one end of the cable; so, terminators must be installed on the P2 adapter module.
- b. Install the P2 adapter module to the backplane directly in line with the P2 connector on the MVME147. Be sure to orient pin 1 of the adapter with pin 1 of the backplane connector.
- c. Connect a user-supplied cable with compatible pinouts from connector J1 on the P2 adapter to the internal SCSI devices.
- d. Terminators must be installed on the last SCSI device in the system.
- e. Attach the cable supplied with the module from P2 adapter connector J2 to connector J2 on the MVME712M. Be sure to orient cable pin 1 with connector pin 1.
- f. Insert the MVME712M module into the selected slots and tighten the attaching screws.
- g. Make sure that cables will not be pinched by the cover and install cover previously removed.
- h. Connect the power cable to the ac power source and turn the unit on.
- i. LED (DS1, toward the serial ports) on the MVME712M should be lit (the LED can be seen through the opening in the front panel). If not lit, then either a cabling problem exists, a fuse is blown, or both. If a cabling problem, then fix it. If not, check the fuse on the MVME147 module (under U30), replace, if necessary. The fuse on the MVME147 is for Ethernet transceiver power. The resistance of this fuse should be less than 1 ohm.

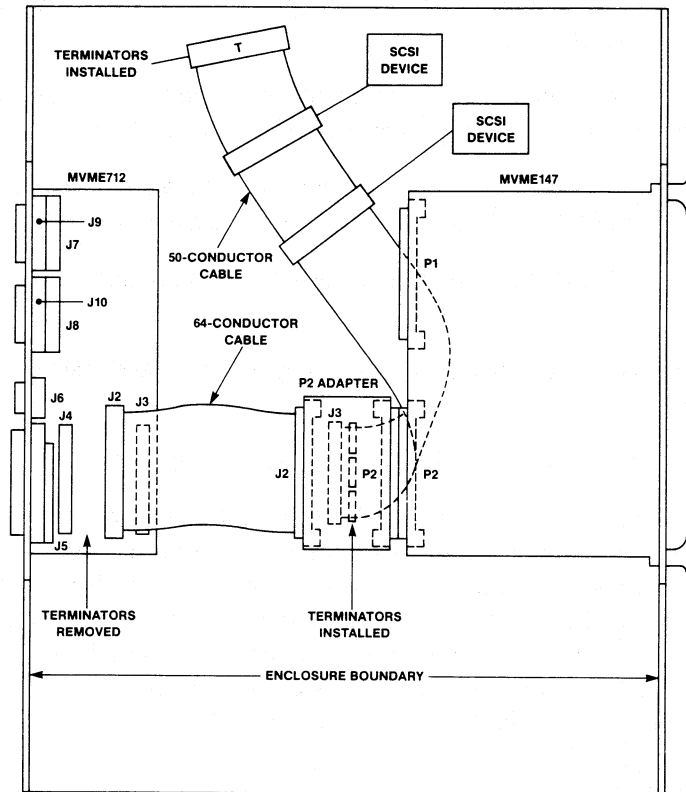


FIGURE 2-11. Internal SCSI Connections

Configuration B – Internal SCSI Devices Only

If SCSI devices are to be attached internal to the user system, and cabled for easy change to configuration C, proceed as follows and see Figure 2-12.

- a. The MVME147 is at one end of the cable; so, terminators must be installed on the P2 adapter module.
- b. The MVME712M is at one end of the cable; so, terminators must be installed on the MVME712M.

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- c. Install the P2 adapter module to the backplane directly in line with the P2 connector on the MVME147. Be sure to orient pin 1 of the adapter with pin 1 of the backplane connector.
- d. Connect a user-supplied cable with compatible pinouts from connector J1 on the P2 adapter to the internal SCSI devices and connector J3 on the MVME712M.
- e. Attach the cable supplied with the module from P2 adapter connector J2 to connector J2 on the MVME712M. Be sure to orient cable pin 1 with connector pin 1.
- f. Insert the MVME712M module into the selected slots and tighten the attaching screws.
- g. Make sure that cables will not be pinched by the cover and install cover previously removed.
- h. Connect the power cable to the ac power source and turn the unit on.
- i. Both LEDs (DS1 and DS2) on the MVME712M should be lit (the LEDs can be seen through the opening in the front panel). If not lit, then either a cabling problem exists, a fuse is blown, or both. If a cabling problem, then fix it. If not, check the fuse on the P2 adapter module and on the MVME147 module (under U30), replace, if necessary. The fuse on the P2 adapter module is for SCSI terminator power. The fuse on the MVME147 is for Ethernet transceiver power. The resistance of this fuse should be less than 1 ohm.

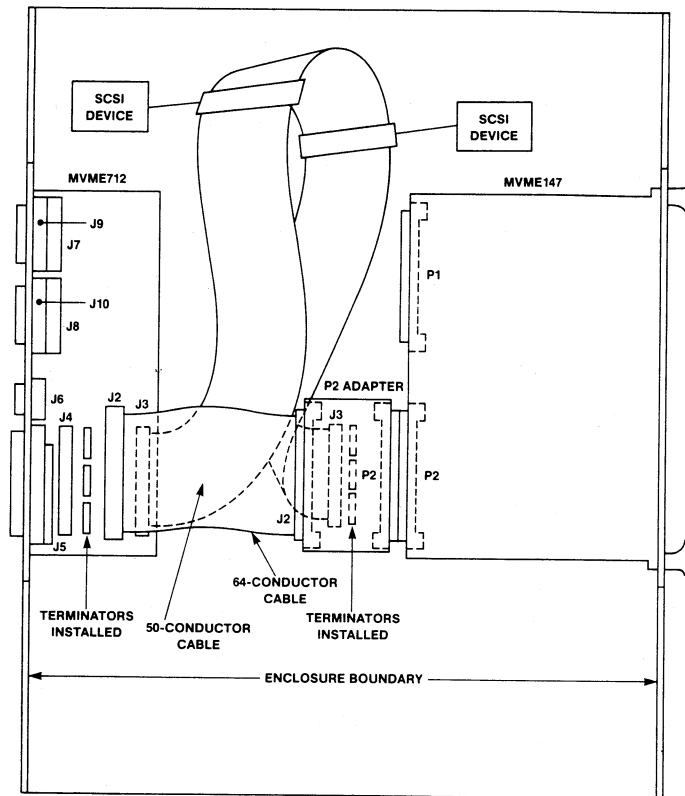


FIGURE 2-12. Internal SCSI Connections

Configuration B1 – Internal SCSI Devices Only

If SCSI devices are to be attached internal to the user system, and cabled for easy change to configuration C1, proceed as follows and see Figure 2-13.

- a. The MVME147 is not at one end of the cable; so, terminators must be removed from the P2 adapter module.
- b. The MVME712M is at one end of the cable; so, terminators must be installed on the MVME712M.

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- c. Install the P2 adapter module to the backplane directly in line with the P2 connector on the MVME147. Be sure to orient pin 1 of the adapter with pin 1 of the backplane connector.
- d. Connect a user-supplied cable with compatible pinouts from connector J3 on the MVME712M and connector J1 on the P2 adapter and on to the internal SCSI devices. This cable must be a continuous cable.
- e. Terminators must be installed on the last SCSI device on the cable.
- f. Attach the cable supplied with the module from P2 adapter connector J2 to connector J2 on the MVME712M. Be sure to orient cable pin 1 with connector pin 1.
- g. Insert the MVME712M module into the selected slots and tighten the attaching screws.
- h. Make sure that cables will not be pinched by the cover and install cover previously removed.
- i. Connect the power cable to the ac power source and turn the unit on.
- j. Both LEDs (DS1 and DS2) on the MVME712M should be lit (the LEDs can be seen through the opening in the front panel). If not lit, then either a cabling problem exists, a fuse is blown, or both. If a cabling problem, then fix it. If not, check the fuse on the P2 adapter module and on the MVME147 module (under U30), replace, if necessary. The fuse on the P2 adapter module is for SCSI terminator power. The fuse on the MVME147 is for Ethernet transceiver power. The resistance of each fuse should be less than 1 ohm.

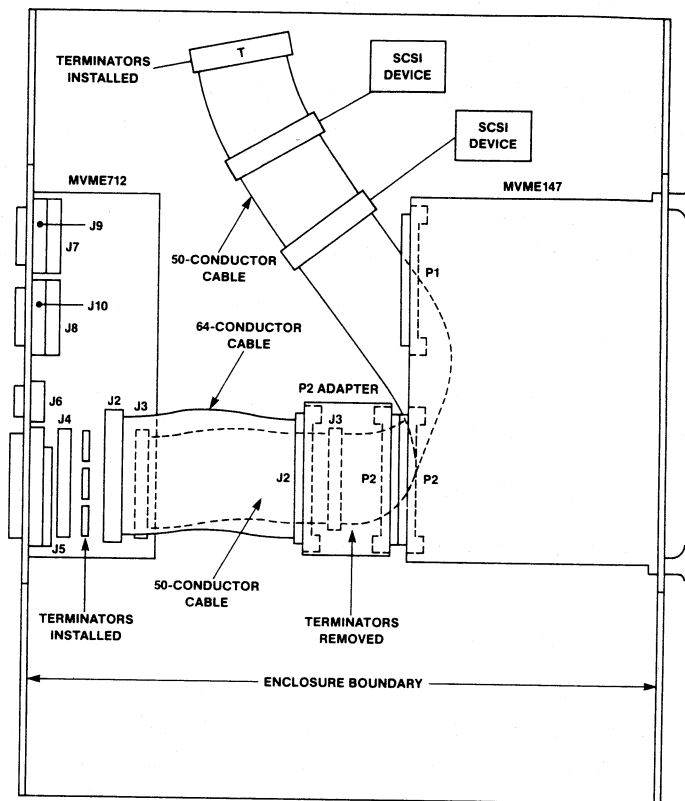


FIGURE 2-13. Internal SCSI Connections

Configuration C – Internal and External SCSI Devices

If SCSI devices are to be attached internal and external to the user system and the MVME147 is at one end of the cable, proceed as follows and see Figure 2-14.

- a. The MVME147 is not at one end of the cable; so, terminators must be removed from the P2 adapter module.
- b. The MVME712M is not at one end of the cable; so, terminators must be removed from the MVME712M.

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- c. Install the P2 adapter module to the backplane directly in line with the P2 connector on the MVME147. Be sure to orient pin 1 of the adapter with pin 1 of the backplane connector.
- d. Connect a user-supplied cable with compatible pinouts from connector J3 on the MVME712M to the internal SCSI devices and on to connector J1 on the P2 adapter.
- e. Attach the cable supplied with the module from P2 adapter connector J2 to connector J2 on the MVME712M. Be sure to orient cable pin 1 with connector pin 1.
- f. Insert the MVME712M module into the selected slots and tighten the attaching screws.
- g. Connect a user-supplied cable with compatible pinouts from connector J5 on the front panel of the MVME712M to the external SCSI devices.
- h. Terminators must be installed on the last SCSI device on the cable.
- i. Make sure that cables will not be pinched by the cover and install cover previously removed.
- j. Connect the power cable to the ac power source and turn the unit on.
- k. Both LEDs (DS1 and DS2) on the MVME712M should be lit (the LEDs can be seen through the opening in the front panel). If not lit, then either a cabling problem exists, a fuse is blown, or both. If a cabling problem, then fix it. If not, check the fuse on the P2 adapter module and on the MVME147 module (under U30), replace, if necessary. The fuse on the P2 adapter module is for SCSI terminator power. The fuse on the MVME147 is for Ethernet transceiver power. The resistance of each fuse should be less than 1 ohm.

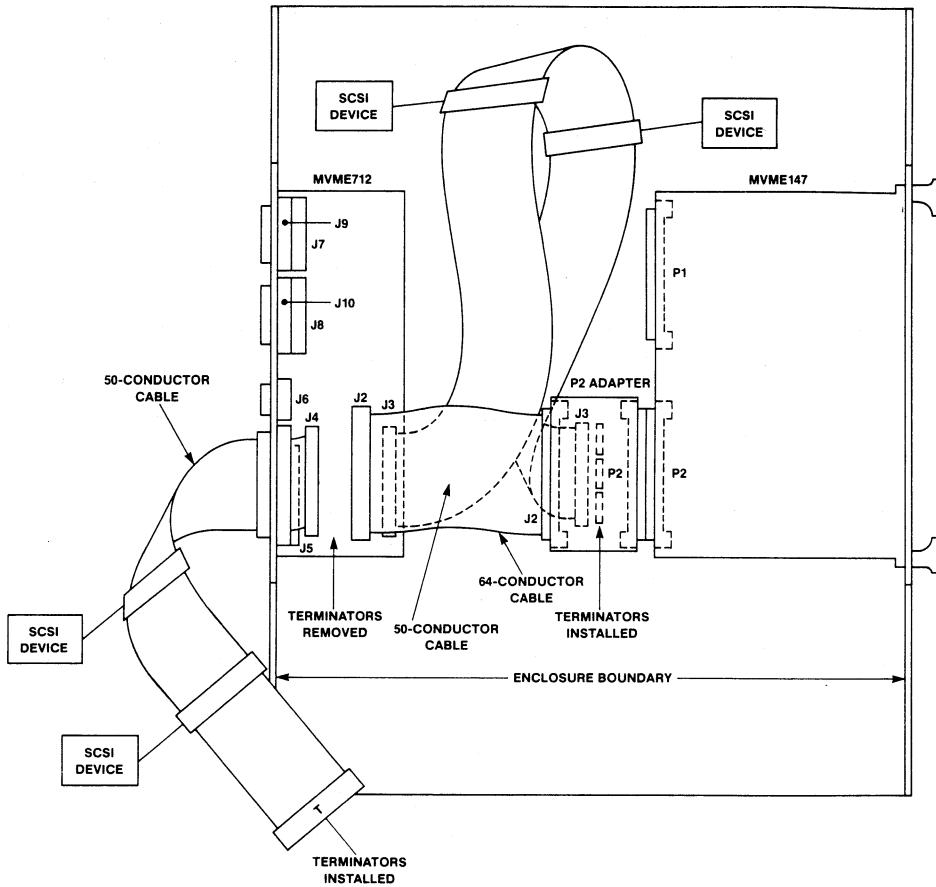


FIGURE 2-14. Internal and External SCSI Connections

Configuration C1 – Internal and External SCSI Devices

If SCSI devices are to be attached internal and external to the user system and the internal SCSI device is at one end of the cable, proceed as follows and see Figure 2-15.

- a. The MVME147 is not at one end of the cable; so, terminators must be removed from the P2 adapter module.
- b. The MVME712M is not at one end of the cable; so, terminators must be removed from the MVME712M.

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- c. Install the P2 adapter module to the backplane directly in line with the P2 connector on the MVME147. Be sure to orient pin 1 of the adapter with pin 1 of the backplane connector.
- d. Connect a user-supplied cable with compatible pinouts from connector J3 on the MVME712M and connector J1 on the P2 adapter and on to the internal SCSI devices. This cable must be a continuous cable.
- e. Terminators must be installed on the last SCSI device on the cable.
- f. Attach the cable supplied with the module from P2 adapter connector J2 to connector J2 on the MVME712M. Be sure to orient cable pin 1 with connector pin 1.
- g. Insert the MVME712M module into the selected slots and tighten the attaching screws.
- h. Connect a user-supplied cable with compatible pinouts from connector J5 on the front panel of the MVME712M to the external SCSI devices.
- i. Terminators must be installed on the last SCSI device on the cable.
- j. Make sure that cables will not be pinched by the cover and install cover previously removed.
- k. Connect the power cable to the ac power source and turn the unit on.
- l. Both LEDs (DS1 and DS2) on the MVME712M should be lit (the LEDs can be seen through the opening in the front panel). If not lit, then either a cabling problem exists, a fuse is blown, or both. If a cabling problem, then fix it. If not, check the fuse on the P2 adapter module and on the MVME147 module (under U30), replace, if necessary. The fuse on the P2 adapter module is for SCSI terminator power. The fuse on the MVME147 is for Ethernet transceiver power. The resistance of each fuse should be less than 1 ohm.

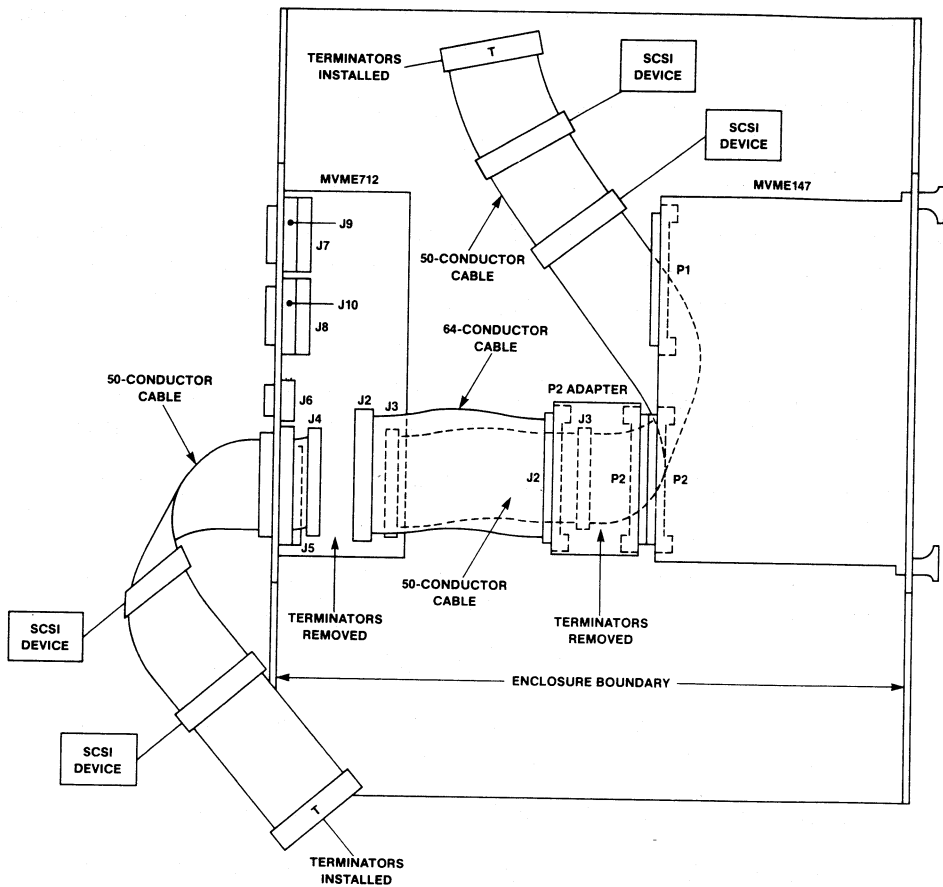


FIGURE 2-15. Internal and External SCSI Connections

Configuration D – Internal and External SCSI Devices

If SCSI devices are to be attached internal and external to the user system and neither the internal SCSI device nor the MVME147 is at one end of the cable, proceed as follows and see Figure 2-16.

- a. The MVME147 is not at one end of the cable; so, terminators must be removed from the P2 adapter module.

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- b. The MVME712M is not at one end of the cable; so, terminators must be removed from the MVME712M.
- c. Install the P2 adapter module to the backplane directly in line with the P2 connector on the MVME147. Be sure to orient pin 1 of the adapter with pin 1 of the backplane connector.
- d. Connect a user-supplied cable with compatible pinouts from connector J3 on the MVME712M and connector J1 on the P2 adapter and on to the internal SCSI devices and to a user-supplied panel on the enclosure. This cable must be a continuous cable.
- e. Attach the cable supplied with the module from P2 adapter connector J2 to connector J2 on the MVME712M. Be sure to orient cable pin 1 with connector pin 1.
- f. Insert the MVME712M module into the selected slots and tighten the attaching screws.
- g. Connect a user-supplied cable with compatible pinouts from connector J5 on the front panel of the MVME712M to the external SCSI devices.
- h. Terminators must be installed on the last SCSI device on the cable.
- i. Connect a user-supplied cable with compatible pinouts from connector on user-supplied panel to the external SCSI devices.
- j. Terminators must be installed on the last SCSI device on the cable.
- k. Make sure that cables will not be pinched by the cover and install cover previously removed.
- l. Connect the power cable to the ac power source and turn the unit on.
- m. Both LEDs (DS1 and DS2) on the MVME712M should be lit (the LEDs can be seen through the opening in the front panel). If not lit, then either a cabling problem exists, a fuse is blown, or both. If a cabling problem, then fix it. If not, check the fuse on the P2 adapter module and on the MVME147 module (under U30), replace, if necessary. The fuse on the P2 adapter module is for SCSI terminator power. The fuse on the MVME147 is for Ethernet transceiver power. The resistance of each fuse should be less than 1 ohm.

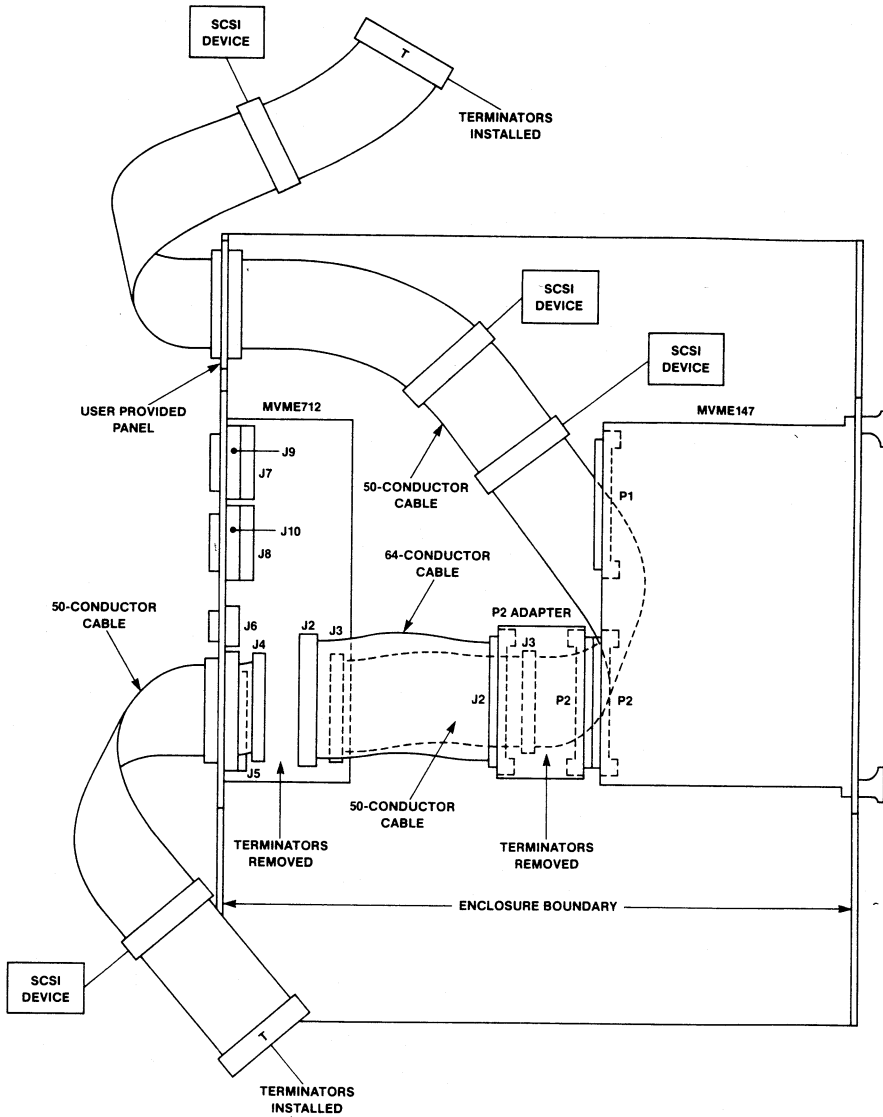


FIGURE 2-16. Internal and External SCSI Connections

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Configuration E – External SCSI Devices Only

If SCSI devices are to be attached external to the user system and the MVME147 is at one end of the cable, proceed as follows and see Figure 2-17.

- a. The MVME147 is at one end of the cable; so, terminators must be installed on the P2 adapter module.
- b. The MVME712M is not at one end of the cable; so, terminators must be removed from the MVME712M.
- c. Install the P2 adapter module to the backplane directly in line with the P2 connector on the MVME147. Be sure to orient pin 1 of the adapter with pin 1 of the backplane connector.
- d. Connect the cable supplied with the module from connector J3 on the MVME712M and connector J1 on the P2 adapter.
- e. Attach the cable supplied with the module from P2 adapter connector J2 to connector J2 on the MVME712M. Be sure to orient cable pin 1 with connector pin 1.
- f. Insert the MVME712M module into the selected slots and tighten the attaching screws.
- g. Connect a user-supplied cable with compatible pinouts from connector J5 on the front panel of the MVME712M to the external SCSI devices.
- h. Terminators must be installed on the last SCSI device on the cable.
- i. Make sure that cables will not be pinched by the cover and install cover previously removed.
- j. Connect the power cable to the ac power source and turn the unit on.
- k. Both LEDs (DS1 and DS2) on the MVME712M should be lit (the LEDs can be seen through the opening in the front panel). If not lit, then either a cabling problem exists, a fuse is blown, or both. If a cabling problem, then fix it. If not, check the fuse on the P2 adapter module and on the MVME147 module (under U30), replace, if necessary. The fuse on the P2 adapter module is for SCSI terminator power. The fuse on the MVME147 is for Ethernet transceiver power. The resistance of each fuse should be less than 1 ohm.

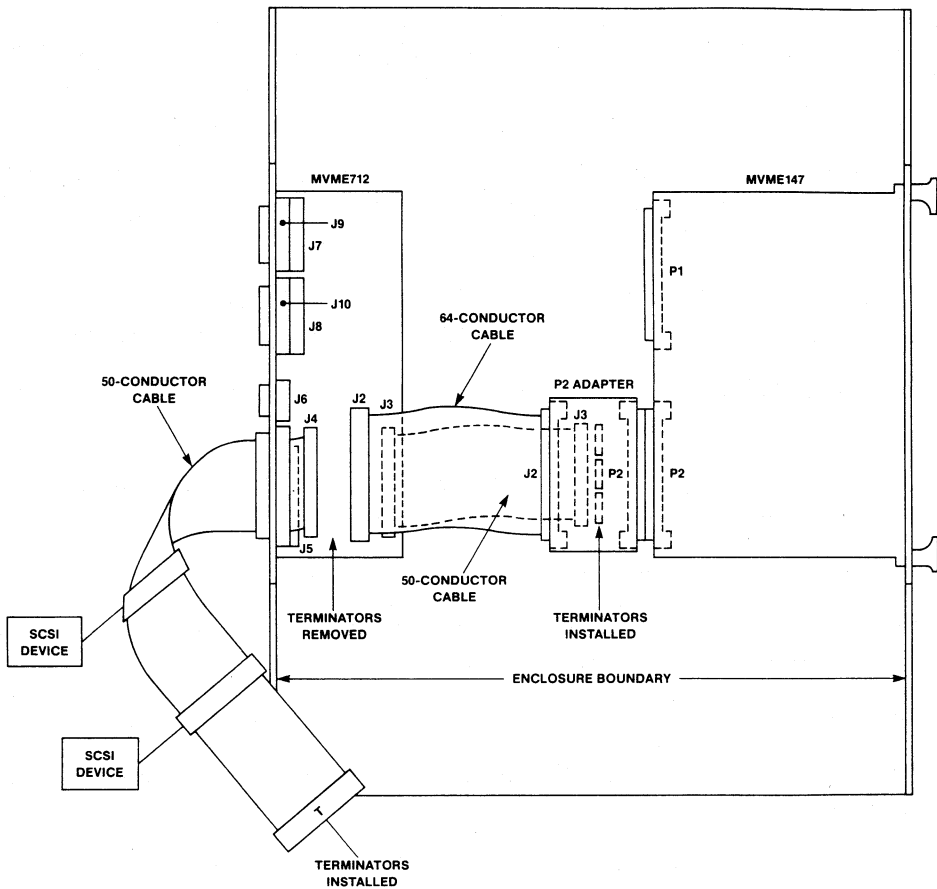


FIGURE 2-17. External SCSI Connections

Configuration F – External SCSI Devices Only

If SCSI devices are to be attached internal and external to the user system and the MVME147 is not at one end of the cable, proceed as follows and see Figure 2-18.

- a. The MVME147 is not at one end of the cable; so, terminators must be removed from the P2 adapter module.
- b. The MVME712M is not at one end of the cable; so, terminators must be removed from the MVME712M.

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- c. Install the P2 adapter module to the backplane directly in line with the P2 connector on the MVME147. Be sure to orient pin 1 of the adapter with pin 1 of the backplane connector.
- d. Connect a user-supplied cable with compatible pinouts from connector J3 on the MVME712M and connector J1 on the P2 adapter and on to a user-supplied panel on the enclosure. This cable must be a continuous cable.
- e. Attach the cable supplied with the module from P2 adapter connector J2 to connector J2 on the MVME712M. Be sure to orient cable pin 1 with connector pin 1.
- f. Insert the MVME712M module into the selected slots and tighten the attaching screws.
- g. Connect a user-supplied cable with compatible pinouts from connector J5 on the front panel of the MVME712M to the external SCSI devices.
- h. Terminators must be installed on the last SCSI device on the cable.
- i. Connect a user-supplied cable with compatible pinouts from connector on user-supplied to the external SCSI devices.
- j. Terminators must be installed on the last SCSI device on the cable.
- k. Make sure that cables will not be pinched by the cover and install cover previously removed.
- l. Connect the power cable to the ac power source and turn the unit on.
- m. Both LEDs (DS1 and DS2) on the MVME712M should be lit (the LEDs can be seen through the opening in the front panel). If not lit, then either a cabling problem exists, a fuse is blown, or both. If a cabling problem, then fix it. If not, check the fuse on the P2 adapter module and on the MVME147 module (under U30), replace, if necessary. The fuse on the P2 adapter module is for SCSI terminator power. The fuse on the MVME147 is for Ethernet transceiver power. The resistance of each fuse should be less than 1 ohm.

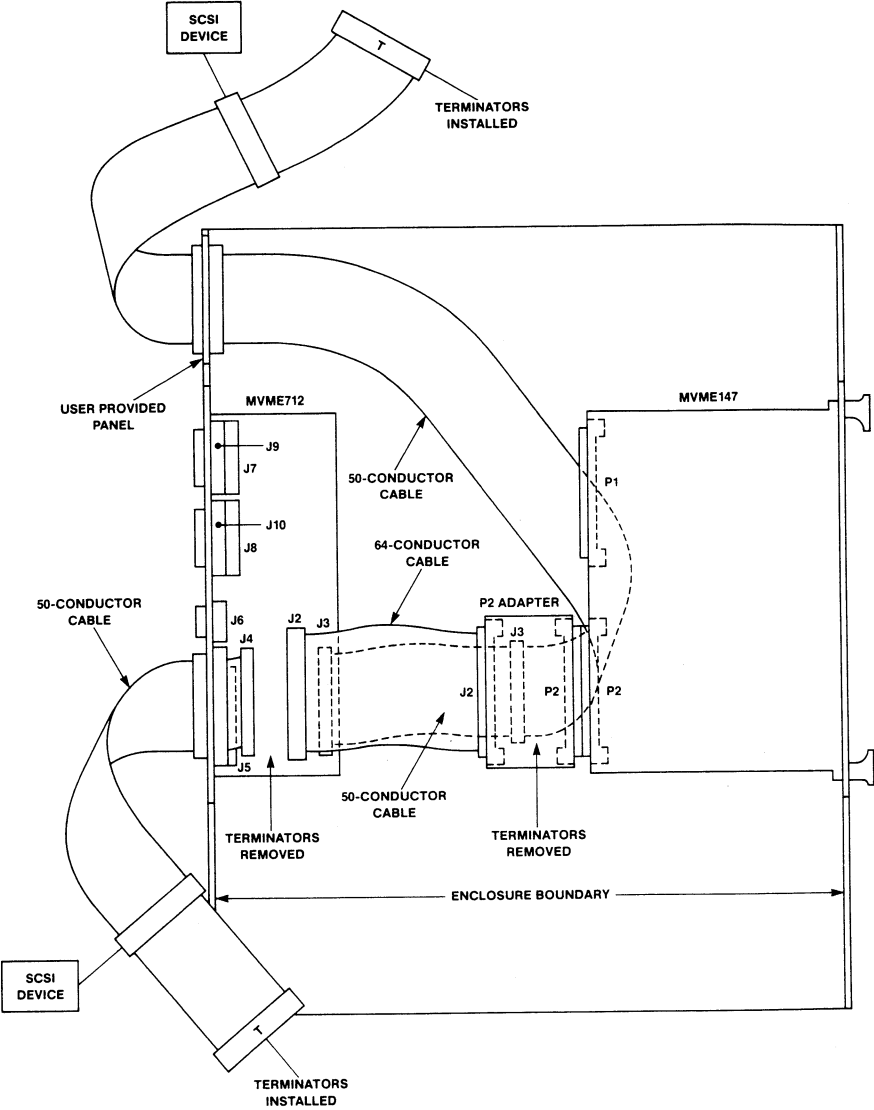


FIGURE 2-18. External SCSI Connections

CHAPTER 3 – SUPPORT INFORMATION

INTRODUCTION

This chapter provides the interconnection signals, parts list with parts location illustration, and schematic diagrams for the MVME712M and P2 adapter.

INTERCONNECT SIGNALS

Connectors J2 and J3 on the P2 adapter and connectors J2 and J3 on the MVME712M are cabled together. Connector P2 on the P2 adapter is connected to the backplane at the MVME147 P2 connector.

J4 is a 50-pin connector for the SCSI port, J5 is a 36-pin connector for the printer port, J6 is a 15-pin connector for the Ethernet interface, and J7–J10 are 25-pin RS-232C connectors for the serial ports on the MVME712M front panel. J20 is a 20-pin connector for connection to a chassis internal modem and J21 is a 6-pin connector for modem power on the MVME712M.

All front panel connectors have metal shells and jack posts that are electrically connected to the front panel. If the front panel is electrically connected to the chassis ground then the shells and jack posts are connected to chassis ground. This allows shielded cable to be used for effective reduction of EMI and EMC problems.

Connector P2 Interconnect Signals (P2 Adapter)

Connector P2 is a standard DIN 41612 triple-row, 96-pin male connector. Each pin connection, signal mnemonic, and signal characteristic for the connector rows A and C are the same pin-for-pin as connector P2 on the MVME147. Row B has only +5 Vdc and ground connected on the P2 adapter.

Connector J2 Interconnect Signals (P2 Adapter)

Connector J2 on the P2 adapter is a 64-pin connector. Each pin connection, signal mnemonic, and signal characteristic for the connectors is listed in Table 3-1.

TABLE 3-1. Connector J2 Interconnect Signals

PIN NUMBER	SIGNAL MNEMONIC	SIGNAL NAME AND DESCRIPTION
1	C-	COLLISION - (Input) (Ethernet) - part of a differential pair.
2	C+	COLLISION + (Input) (Ethernet) - a signal to indicate that multiple stations are contending for access to the transmission medium.
3	T-	TRANSMIT - (Output) (Ethernet) - part of a differential pair.
4	T+	TRANSMIT + (Output) (Ethernet) - this line is intended to operate into terminated transmission lines.
5	R-	RECEIVE - (Input) (Ethernet) - part of a differential pair.
6	R+	RECEIVE + (Input) (Ethernet) - a data input sourced by the MAU.
7	PRSTB*	DATA STROBE (Printer) - an active low output pulse used to clock data from the system to the printer.
8	+12VF	+12 Vdc Power (fused) (Ethernet) - fused +12 Vdc sourced by the DTE.
9	PRD00	DATA (bit 1) (Printer)
10	GND	GROUND
11	PRD02	DATA (bit 2) (Printer)
12	PRD01	DATA (bit 0) (Printer)

TABLE 3-1. Connector J2 Interconnect Signals (cont'd)

PIN NUMBER	SIGNAL MNEMONIC	SIGNAL NAME AND DESCRIPTION
13	PRD04	DATA (bit 3) (Printer)
14	PRD03	DATA (bit 3) (Printer)
15	PRD06	DATA (bit 4) (Printer)
16	PRD05	DATA (bit 5) (Printer)
17	GND	GROUND
18	PRD07	DATA (bit 7) (Printer)
19	GND	GROUND
20	PRACK*	DATA ACKNOWLEDGE (Printer) – a low level input pulse indicating that the next character may be sent.
21	PRPE	PAPER EMPTY (Printer) – out of paper.
22	PRBSY	BUSY (Printer) – an input signal indicating that the printer cannot receive data.
23	INPRIME*	INPUT PRIME (Printer) – an output signal that clears the printer buffer and initializes the logic.
24	PRSEL	SELECTED (Printer) – an input signal indicating that the printer is selected.
25	GND	GROUND
26	PRFAULT*	FAULT (Printer) – an input signal that indicates a printer fault condition.
27	GND	GROUND
28	TXD3	TRANSMIT DATA (serial port 3) – data to be transmitted is furnished on this line to the modem from the terminal.
29	GND	GROUND

TABLE 3-1. Connector J2 Interconnect Signals (cont'd)

PIN NUMBER	SIGNAL MNEMONIC	SIGNAL NAME AND DESCRIPTION
30	RXD3	RECEIVE DATA (serial port 3) – data that is demodulated from the receive line is presented to the terminal by the modem.
31	CTS3	CLEAR TO SEND (serial port 3) – CTS is a function supplied to the terminal by the modem, and indicates that it is permissible to begin transmission of a message. When using a modem, CTS follows the off-to-on transition of RTS after a time delay.
32	RTS3	REQUEST TO SEND (serial port 3) – RTS is supplied by the terminal to the modem when it is required to transmit a message. With RTS off, the modem carrier remains off. When RTS is turned on, the modem immediately turns on the carrier.
33	DCD3	DATA CARRIER DETECT (serial port 3) – sent by the modem to the terminal to indicate that a valid carrier is being received.
34	DTR3	DATA TERMINAL READY (serial port 3) – a signal from the terminal to the modem indicating that the terminal is ready to send or receive data.
35	TXD1	TRANSMIT DATA (serial port 1) – data to be transmitted is furnished on this line to the modem from the terminal.
36	GND	GROUND
37	RXD1	RECEIVE DATA (serial port 1) – data that is demodulated from the receive line is presented to the terminal by the modem.
38	GND	GROUND

TABLE 3-1. Connector J2 Interconnect Signals (cont'd)

PIN NUMBER	SIGNAL MNEMONIC	SIGNAL NAME AND DESCRIPTION
39	RTS1	REQUEST TO SEND (serial port 1) – RTS is supplied by the terminal to the modem when it is required to transmit a message. With RTS off, the modem carrier remains off. When RTS is turned on, the modem immediately turns on the carrier.
40,41	GND	GROUND
42	CTS1	CLEAR TO SEND (serial port 1) – CTS is a function supplied to the terminal by the modem, and indicates that it is permissible to begin transmission of a message. When using a modem, CTS follows the off-to-on transition of RTS after a time delay.
43	GND	GROUND
44	TXD4	TRANSMIT DATA (serial port 4) – data to be transmitted is furnished on this line to the modem from the terminal.
45	GND	GROUND
46	RXD4	RECEIVE DATA (serial port 4) – data that is demodulated from the receive line is presented to the terminal by the modem.
47	GND	GROUND
48	RTS4	REQUEST TO SEND (serial port 4) – RTS is supplied by the terminal to the modem when it is required to transmit a message. With RTS off, the modem carrier remains off. When RTS is turned on, the modem immediately turns on the carrier.
49	GND	GROUND
50	TRXC4	TRANSMIT CLOCK (serial port 4) – this line can be configured to clock output data to the modem from the terminal.

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TABLE 3-1. Connector J2 Interconnect Signals (cont'd)

PIN NUMBER	SIGNAL MNEMONIC	SIGNAL NAME AND DESCRIPTION
51	DTR4	DATA TERMINAL READY (serial port 4) – a signal from the terminal to the modem indicating that the terminal is ready to send or receive data.
52	CTS4	CLEAR TO SEND (serial port 4) – CTS is a function supplied to the terminal by the modem, and indicates that it is permissible to begin transmission of a message. When using a modem, CTS follows the off-to-on transition of RTS after a time delay.
53	GND	GROUND
54	DCD4	DATA CARRIER DETECT (serial port 4) – sent by the modem to the terminal to indicate that a valid carrier is being received.
55	GND	GROUND
56	RTXC4	RECEIVE CLOCK (serial port 4) – this line can be configured to clock input data from a terminal to a modem.
57	GND	GROUND
58	TXD2	TRANSMIT DATA (serial port 2) – data to be transmitted is furnished on this line to the modem from the terminal.
59	GND	GROUND
60	RXD2	RECEIVE DATA (serial port 2) – data that is demodulated from the receive line is presented to the terminal by the modem.

TABLE 3-1. Connector J2 Interconnect Signals (cont'd)

PIN NUMBER	SIGNAL MNEMONIC	SIGNAL NAME AND DESCRIPTION
61	CTS2	CLEAR TO SEND (serial port 2) – CTS is a function supplied to the terminal by the modem, and indicates that it is permissible to begin transmission of a message. When using a modem, CTS follows the off-to-on transition of RTS after a time delay.
62	RTS2	REQUEST TO SEND (serial port 2) – RTS is supplied by the terminal to the modem when it is required to transmit a message. With RTS off, the modem carrier remains off. When RTS is turned on, the modem immediately turns on the carrier.
63	DCD2	DATA CARRIER DETECT (serial port 2) – sent by the modem to the terminal to indicate that a valid carrier is being received.
64	DTR2	DATA TERMINAL READY (serial port 2) – a signal from the terminal to the modem indicating that the terminal is ready to send or receive data.

Connector J2 Interconnect Signals

Connector J2 on the MVME712M is used to cable to the P2 adapter. Each pin connection, signal mnemonic, and signal characteristic for the connectors is listed in Table 3-2.

TABLE 3-2. Connector J2 Interconnect Signals

PIN NUMBER	SIGNAL MNEMONIC	SIGNAL NAME AND DESCRIPTION
A1	C-	COLLISION - (Input) (Ethernet) - part of a differential pair.
A2	T-	TRANSMIT - (Output) (Ethernet) - part of a differential pair.
A3	R-	RECEIVE - (Input) (Ethernet) - part of a differential pair.
A4	+12VF	+12 Vdc Power (fused) (Ethernet) - fused +12 Vdc sourced by the DTE.
A5	GND	GROUND
A6	PRD01	DATA (bit 0) (Printer)
A7	PRD03	DATA (bit 3) (Printer)
A8	PRD05	DATA (bit 5) (Printer)
A9	PRD07	DATA (bit 7) (Printer)
A10	PRACK*	DATA ACKNOWLEDGE (Printer) - a low level input pulse indicating that the next character may be sent.
A11	PRBSY	BUSY (Printer) - an input signal indicating that the printer cannot receive data.
A12	PRSEL	SELECTED (Printer) - an input signal indicating that the printer is selected.
A13	PRFAULT*	FAULT (Printer) - an input signal that indicates a printer fault condition.

TABLE 3-2. Connector J2 Interconnect Signals (cont'd)

PIN NUMBER	SIGNAL MNEMONIC	SIGNAL NAME AND DESCRIPTION
A14	TXD3	TRANSMIT DATA (serial port 3) – data to be transmitted is furnished on this line to the modem from the terminal.
A15	RXD3	RECEIVE DATA (serial port 3) – data that is demodulated from the receive line is presented to the terminal by the modem.
A16	RTS3	REQUEST TO SEND (serial port 3) – RTS is supplied by the terminal to the modem when it is required to transmit a message. With RTS off, the modem carrier remains off. When RTS is turned on, the modem immediately turns on the carrier.
A17	DTR3	DATA TERMINAL READY (serial port 3) – a signal from the terminal to the modem indicating that the terminal is ready to send or receive data.
A18–A20	GND	GROUND
A21	CTS1/DCD1	CLEAR TO SEND (serial port 1) – CTS is a function supplied to the terminal by the modem, and indicates that it is permissible to begin transmission of a message. When using a modem, CTS follows the off-to-on transition of RTS after a time delay.
A22	TXD4	TRANSMIT DATA (serial port 4) – data to be transmitted is furnished on this line to the modem from the terminal.
A23	RXD4	RECEIVE DATA (serial port 4) – data that is demodulated from the receive line is presented to the terminal by the modem.

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TABLE 3-2. Connector J2 Interconnect Signals (cont'd)

PIN NUMBER	SIGNAL MNEMONIC	SIGNAL NAME AND DESCRIPTION
A24	RTS4	REQUEST TO SEND (serial port 4) – RTS is supplied by the terminal to the modem when it is required to transmit a message. With RTS off, the modem carrier remains off. When RTS is turned on, the modem immediately turns on the carrier.
A25	TRXC4	TRANSMIT CLOCK (serial port 4) – this line can be configured to clock output data to the modem from the terminal.
A26	CTS4	CLEAR TO SEND (serial port 4) – CTS is a function supplied to the terminal by the modem, and indicates that it is permissible to begin transmission of a message. When using a modem, CTS follows the off-to-on transition of RTS after a time delay.
A27	DCD4	DATA CARRIER DETECT (serial port 4) – sent by the modem to the terminal to indicate that a valid carrier is being received.
A28	RTXC4	RECEIVE CLOCK (serial port 4) – this line can be configured to clock input data from a terminal to a modem.
A29	TXD2	TRANSMIT DATA (serial port 2) – data to be transmitted is furnished on this line to the modem from the terminal.
A30	RXD2	RECEIVE DATA (serial port 2) – data that is demodulated from the receive line is presented to the terminal by the modem.
A31	RTS2	REQUEST TO SEND (serial port 2) – RTS is supplied by the terminal to the modem when it is required to transmit a message. With RTS off, the modem carrier remains off. When RTS is turned on, the modem immediately turns on the carrier.

TABLE 3-2. Connector J2 Interconnect Signals (cont'd)

PIN NUMBER	SIGNAL MNEMONIC	SIGNAL NAME AND DESCRIPTION
A32	DTR2	DATA TERMINAL READY (serial port 2) – a signal from the terminal to the modem indicating that the terminal is ready to send or receive data.
C1	C+	COLLISION + (Input) (Ethernet) – a signal to indicate that multiple stations are contending for access to the transmission medium.
C2	T+	TRANSMIT + (Output) (Ethernet) – this line is intended to operate into terminated transmission lines.
C3	R+	RECEIVE + (Input) (Ethernet) – a data input sourced by the MAU.
C4	PRSTB*	DATA STROBE (Printer) – an active low output pulse used to clock data from the system to the printer.
C5	PRD00	DATA (bit 1) (Printer)
C6	PRD02	DATA (bit 2) (Printer)
C7	PRD04	DATA (bit 3) (Printer)
C8	PRD06	DATA (bit 4) (Printer)
C9,C10	GND	GROUND
C11	PRPE	PAPER EMPTY (Printer) – out of paper.
C12	INPRIME*	INPUT PRIME (Printer) – an output signal that clears the printer buffer and initializes the logic.
C13-C15	GND	GROUND
C16	CTS3	CLEAR TO SEND (serial port 3) – CTS is a function supplied to the terminal by the modem, and indicates that it is permissible to begin transmission of a message. When using a modem, CTS follows the off-to-on transition of RTS after a time delay.

TABLE 3-2. Connector J2 Interconnect Signals (cont'd)

PIN NUMBER	SIGNAL MNEMONIC	SIGNAL NAME AND DESCRIPTION
C17	DCD3	DATA CARRIER DETECT (serial port 3) – sent by the modem to the terminal to indicate that a valid carrier is being received.
C18	TXD1	TRANSMIT DATA (serial port 1) – data to be transmitted is furnished on this line to the modem from the terminal.
C19	RXD1	RECEIVE DATA (serial port 1) – data that is demodulated from the receive line is presented to the terminal by the modem.
C20	RTS1	REQUEST TO SEND (serial port 1) – RTS is supplied by the terminal to the modem when it is required to transmit a message. With RTS off, the modem carrier remains off. When RTS is turned on, the modem immediately turns on the carrier.
C21–C25	GND	GROUND
C26	DTR4	DATA TERMINAL READY (serial port 4) – a signal from the terminal to the modem indicating that the terminal is ready to send or receive data.
C27–C30	GND	GROUND
C31	CTS2	CLEAR TO SEND (serial port 2) – CTS is a function supplied to the terminal by the modem, and indicates that it is permissible to begin transmission of a message. When using a modem, CTS follows the off-to-on transition of RTS after a time delay.
C32	DCD2	DATA CARRIER DETECT (serial port 2) – sent by the modem to the terminal to indicate that a valid carrier is being received.

Connector J3, J4 Interconnect Signals (MVME712M and P2 Adapter)

Connectors J3 and J4 on the MVME712M module and the P2 adapter board are same pin-for-pin. Each pin connection, signal mnemonic, and signal characteristic for the connectors is listed in Table 3-3.

TABLE 3-3. Connector J3, J4 Interconnect Signals

PIN NUMBER	SIGNAL MNEMONIC	SIGNAL NAME AND DESCRIPTION
1	GND	GROUND
2	DB00*	DATA bus (bit 0) – least significant bit and the lowest priority during the arbitration phase.
3	GND	GROUND
4	DB01*	DATA bus (bit 1)
5	GND	GROUND
6	DB02*	DATA bus (bit 2)
7	GND	GROUND
8	DB03*	DATA bus (bit 3)
9	GND	GROUND
10	DB04*	DATA bus (bit 4)
11	GND	GROUND
12	DB05*	DATA bus (bit 5)
13	GND	GROUND
14	DB06*	DATA bus (bit 6)
15	GND	GROUND
16	DB07*	DATA bus (bit 7) – most significant bit and the highest priority during the arbitration phase.

SUPPORT INFORMATION

TABLE 3-3. Connector J3, J4 Interconnect Signals (cont'd)

PIN NUMBER	SIGNAL MNEMONIC	SIGNAL NAME AND DESCRIPTION
17	GND	GROUND
18	DBP*	DATA bus (parity) – data parity is odd. Use of parity is a system option. Parity is not valid during the arbitration phase.
19–24	GND	GROUND
25		Not used.
26	TERMPWR	TERMINATOR POWER
27–31	GND	GROUND
32	ATN*	ATTENTION – signal driven by the initiator. Indicates the attention condition.
33–35	GND	GROUND
36	BSY*	BUS BUSY – OR-tied signal that indicates that the bus is being used.
37	GND	GROUND
38	ACK*	ACKNOWLEDGE – signal driven by an initiator to indicate an acknowledgement for a REQ/ACK data transfer handshake.
39	GND	GROUND
40	RST*	RESET – OR-tied signal that indicates the RESET condition.
41	GND	GROUND
42	MSG*	MESSAGE – signal driven by the target during the message phase.
43	GND	GROUND

TABLE 3-3. Connector J3, J4 Interconnect Signals (cont'd)

PIN NUMBER	SIGNAL MNEMONIC	SIGNAL NAME AND DESCRIPTION
44	SEL*	SELECT – signal used by an initiator to select a target or by a target to reselect an initiator.
45	GND	GROUND
46	D/C*	DATA/COMMAND – signal driven by the target. It indicates whether command or data information is on the data bus. True (low) indicates command.
47	GND	GROUND
48	REQ*	REQUEST – signal driven by a target to indicate a request for a REQ/ACK data transfer handshake.
49	GND	GROUND
50	O/I*	OUTPUT/INPUT – signal driven by a target which controls the direction of data movement on the bus. True (low) indicates input to the initiator. False (high) indicates output from the initiator. This signal is also used to distinguish between selection and reselection phases.

Connector SCSI INTERFACE Interconnect Signals (MVME712M)

The SCSI INTERFACE is the front panel connector. Each pin connection, signal mnemonic, and signal characteristic for the connectors is listed in Table 3-4.

TABLE 3-4. Connector SCSI INTERFACE Interconnect Signals

PIN NUMBER	SIGNAL MNEMONIC	SIGNAL NAME AND DESCRIPTION
1-25	GND	GROUND
26	DB00*	DATA bus (bit 0) – least significant bit and the lowest priority during the arbitration phase.
27	DB01*	DATA bus (bit 1)
28	DB02*	DATA bus (bit 2)
29	DB03*	DATA bus (bit 3)
30	DB04*	DATA bus (bit 4)
31	DB05*	DATA bus (bit 5)
32	DB06*	DATA bus (bit 6)
33	DB07*	DATA bus (bit 7) – most significant bit and the highest priority during the arbitration phase.
34	DBP*	DATA bus (parity) – data parity is odd. Use of parity is a system option. Parity is not valid during the arbitration phase.
35-37	GND	GROUND
38	TERMPWR	TERMINATOR POWER
39,40	GND	GROUND
41	ATN*	ATTENTION – signal driven by the initiator. Indicates the attention condition.
42	GND	GROUND

TABLE 3-4. Connector SCSI INTERFACE Interconnect Signals (cont'd)

PIN NUMBER	SIGNAL MNEMONIC	SIGNAL NAME AND DESCRIPTION
43	BSY*	BUS BUSY – OR-tied signal that indicates that the bus is being used.
44	ACK*	ACKNOWLEDGE – signal driven by an initiator to indicate an acknowledgement for a REQ/ACK data transfer handshake.
45	RST*	RESET – OR-tied signal that indicates the RESET condition.
46	MSG*	MESSAGE – signal driven by the target during the message phase.
47	SEL*	SELECT – signal used by an initiator to select a target or by a target to reselect an initiator.
48	D/C*	DATA/COMMAND – signal driven by the target. It indicates whether command or data information is on the data bus. True (low) indicates command.
49	REQ*	REQUEST – signal driven by a target to indicate a request for a REQ/ACK data transfer handshake.
50	O/I*	OUTPUT/INPUT – signal driven by a target which controls the direction of data movement on the bus. True (low) indicates input to the initiator. False (high) indicates output from the initiator. This signal is also used to distinguish between selection and reselection phases.

Connector J5 Interconnect Signals (MVME712M)

Connector J5 is the printer port on the MVME712M. This is a Centronics type port. Each pin connection, signal mnemonic, and signal characteristic for the connector is listed in Table 3-5.

TABLE 3-5. Connector J5 Interconnect Signals

PIN NUMBER	SIGNAL MNEMONIC	SIGNAL NAME AND DESCRIPTION
1	PRSTB*	DATA STROBE – an active low output pulse used to clock data from the system to the printer.
2	PRD0	DATA (bit 0)
3	PRD1	DATA (bit 1)
4	PRD2	DATA (bit 2)
5	PRD3	DATA (bit 3)
6	PRD4	DATA (bit 4)
7	PRD5	DATA (bit 5)
8	PRD6	DATA (bit 6)
9	PRD7	DATA (bit 7)
10	PRACK*	DATA ACKNOWLEDGE – a low level input pulse indicating that the next character may be sent.
11	PRBSY	BUSY – an input signal indicating that the printer cannot receive data.
12	PRPE	PAPER EMPTY – out of paper.
13	PRSEL	SELECTED – an input signal indicating that the printer is selected.
14,15		Not used.
16	GND	GROUND

TABLE 3-5. Connector J5 Interconnect Signals (cont'd)

PIN NUMBER	SIGNAL MNEMONIC	SIGNAL NAME AND DESCRIPTION
17,18		Not used.
19-30	GND	GROUND
31	INPRIME*	INPUT PRIME - an output signal that clears the printer buffer and initializes the logic.
32	PRFAULT*	FAULT - an input signal that indicates a printer fault condition.
33-36		Not used.

Connector J6 Interconnect Signals (MVME712M)

Connector J6 is the Ethernet port on the MVME712M. Each pin connection, signal mnemonic, and signal characteristic for the connector is listed in Table 3-6.

TABLE 3-6. Connector J6 Interconnect Signals

PIN NUMBER	SIGNAL MNEMONIC	SIGNAL NAME AND DESCRIPTION
1		Not used.
2	C+	COLLISION + (Input) - a signal to indicate that multiple stations are contending for access to the transmission medium.
3	T+	TRANSMIT + (Output) - this line is intended to operate into terminated transmission lines.
4		Not used.
5	R+	RECEIVE + (Input) - a data input sourced by the MAU.
6	GND	GROUND

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TABLE 3-6. Connector J6 Interconnect Signals (cont'd)

PIN NUMBER	SIGNAL MNEMONIC	SIGNAL NAME AND DESCRIPTION
7,8		Not used.
9	C-	COLLISION - (Input) - part of a differential pair.
10	T-	TRANSMIT - (Output) - part of a differential pair.
11		Not used.
12	R-	RECEIVE - (Input) - part of a differential pair.
13	+12VF	+12 Vdc Power (fused) - fused +12 Vdc sourced by the DTE.
14,15		Not used.

Connectors J7-J10 Interconnect Signals (MVME712M)

Connectors J7-J10 are RS-232C 25-pin front panel connectors. Each pin connection, signal mnemonic, and signal characteristic for the connectors is listed in Table 3-7.

TABLE 3-7. RS-232C Connectors J7-J10 Interconnect Signals

PIN NUMBER	SIGNAL MNEMONIC	SIGNAL NAME AND DESCRIPTION
1		Not used.
2	ETXD	TRANSMIT DATA - data to be transmitted is furnished on this line to the modem from the terminal.
3	ERXD	RECEIVE DATA - data that is demodulated from the receive line is presented to the terminal by the modem.
4	RTS	Not used.

TABLE 3-7. RS-232C Connectors J7-J10 Interconnect Signals (cont'd)

PIN NUMBER	SIGNAL MNEMONIC	SIGNAL NAME AND DESCRIPTION
5	ECTS	CLEAR TO SEND - CTS is a function supplied to the terminal by the modem, and indicates that it is permissible to begin transmission of a message. When using a modem, CTS follows the off-to-on transition of RTS after a time delay.
6	EDSR	DATA SET READY - DSR is a function supplied by the modem to the terminal to indicate that the modem is ready to transmit data.
7	GND	SIGNAL GROUND - Common return line connected to the MVME147 ground plane. Not connected to chassis ground.
8	EDCD	DATA CARRIER DETECT - Sent by the modem to the terminal to indicate that a valid carrier is being received. Not used by port 1 (J7).
9-14		Not used.
15	ERTXC4	TRANSMIT CLOCK (port 4 only) - This line can be configured to clock output data to the modem from the terminal.
16		Not used.
17	ERRXC4	RECEIVE CLOCK (port 4 only) - This line can be configured to clock input data from a terminal to a modem.
18-19		Not used.
20	EDTR	DATA TERMINAL READY - A signal from the terminal to the modem indicating that the terminal is ready to send or receive data.
21-23		Not used.

SUPPORT INFORMATION

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TABLE 3-7. RS-232C Connectors J7-J10 Interconnect Signals (cont'd)

PIN NUMBER	SIGNAL MNEMONIC	SIGNAL NAME AND DESCRIPTION
24	ETTXC4	TRANSMIT CLOCK (port 4 only) - This line can be configured to clock output data to the modem from the terminal.
25		Not used.

Connector J20 Interconnect Signals (MVME712M)

Connector J20 is the internal modem port. Each pin connection, signal mnemonic, and signal characteristic for the connector is listed in Table 3-8.

TABLE 3-8. Connector J20 Interconnect Signals

PIN NUMBER	SIGNAL MNEMONIC	SIGNAL NAME AND DESCRIPTION
1	CTS2	CLEAR TO SEND - CTS is a function supplied to the terminal by the modem, and indicates that it is permissible to begin transmission of a message. When using a modem, CTS follows the off-to-on transition of RTS after a time delay.
2	TXD2	TRANSMIT DATA - data to be transmitted is furnished on this line to the modem from the terminal.
3	DCD2	DATA CARRIER DETECT - Sent by the modem to the terminal to indicate that a valid carrier is being received.
4	RXD2	RECEIVE DATA - data that is demodulated from the receive line is presented to the terminal by the modem.
5-10		Not used.
11	DTR2	DATA TERMINAL READY - A signal from the terminal to the modem indicating that the terminal is ready to send or receive data.

TABLE 3-8. Connector J20 Interconnect Signals (cont'd)

PIN NUMBER	SIGNAL MNEMONIC	SIGNAL NAME AND DESCRIPTION
12	-12VMODEM	-12 Vdc Power – used by the internal modem.
13	+5VMODEM	+5 Vdc Power – used by the internal modem.
14-15	GND	GROUND
16	+12VMODEM	+12 Vdc Power – used by the internal modem.
17-20		Not used.

Connector J21 Interconnect Signals

Connector J21 is the backplane modem power connector. Each pin connection, signal mnemonic, and signal characteristic for the connector is listed in Table 3-9.

TABLE 3-9. Connector J21 Interconnect Signals

PIN NUMBER	SIGNAL MNEMONIC	SIGNAL NAME AND DESCRIPTION
1	+5VMODEM	+5 Vdc Power – supplied by the backplane and routed to J20.
2	+12VMODEM	+12 Vdc Power – supplied by the backplane and routed to J20.
3	-12VMODEM	-12 Vdc Power – supplied by the backplane and routed to J20.
4	GND	GROUND
5,6		Not used.

SUPPORT INFORMATION

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PARTS LIST

The components of the MVME712M are listed in Table 3-10. The parts locations for the MVME712M are shown in Figure 3-1. The components of the P2 adapter are listed in Table 3-10. The parts locations are shown in Figure 3-2. These parts reflect the latest issue of hardware at the time of printing.

TABLE 3-10. MVME712M Module Parts List

REFERENCE DESIGNATION	MOTOROLA PART NUMBER	DESCRIPTION
	84-W8538B01	Printed wiring board
C1-C3	21NW9632A03	Capacitor, fixed, ceramic, 0.1 uF @ 50 Vdc
DS1	48NW9612A48	Light emitting diode, yellow
DS2	48NW9612A73	Light emitting diode, green
J1,J11-J19	29NW9805C07	Pin, autoinsert (127 required)
J2	28NW9802E05	Connector, 64-pin
J3,J4	28NW9802F67	Connector, 50-pin
J5	28NW9802G48	Connector, 36-pin
J6	28NW9802H06	Connector, 15-pin
J7-J10	28NW9802G58	Connector, 25-pin
J20	28NW9802G09	Connector, 20-pin
J21	28NW9802H24	Connector, 6-pin
R1-R5	06SW-125A53	Resistor, fixed, film, 1.5k ohm, 5%, 1/2W
R6	06SW-124A27	Resistor, fixed, film, 120 ohm, 5%, 1/4 W
R7	06SW-125A41	Resistor, fixed, film, 470 ohm, 5%, 1/2 W
R8-R10	51NW9626A60	Terminator, resistor network, 6/220/330 ohm, Dale MSP08A0S-221/331G

TABLE 3-10. MVME712M Module Parts List (cont'd)

REFERENCE DESIGNATION	MOTOROLA PART NUMBER	DESCRIPTION
	09NW9811A90	Socket, SIL, 8-pin (use at R8-R10)
	29NW9805B17	Jumper, shorting, insulated (use at J1,J12, J13,J16,J18)
	28NW9802E19	Connector, 64-pin (use on cable for P2 Adapter J2 and MVME712M J2)

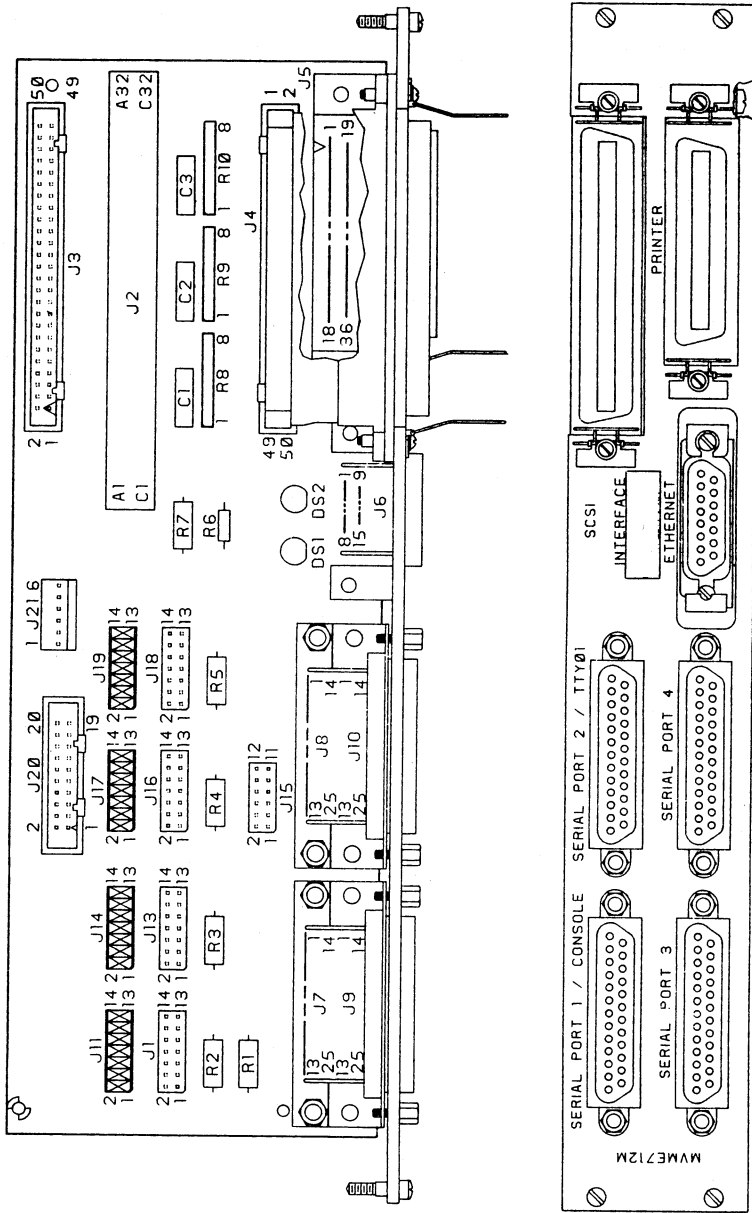


FIGURE 3-1. MVM712M Parts Location

TABLE 3-11. P2 Adapter Module Parts List

REFERENCE DESIGNATION	MOTOROLA PART NUMBER	DESCRIPTION
	84-W8570B01A	Printed wiring board
CR1	48NW9607A01	Rectifier, 1N4001
C1-C3	21NW9632A03	Capacitor, fixed, ceramic, 0.1 uF @ 50 Vdc
F1	65NW9622A26	Fuse, axial, micro, 1 A, 125 V
J2	28NW9802H59	Connector, 64-pin
J3	28NW9802F67	Connector, 50-pin
P2	28NW9802E71	Connector, 96-pin
R1-R3	51NW9626C17	Terminator, resistor network, 6/220/330 ohm
	28NW9802E08	Connector, single socket (use at F1)
	09NW9811A90	Socket, SIL, 8-pin (use at R1-R3)

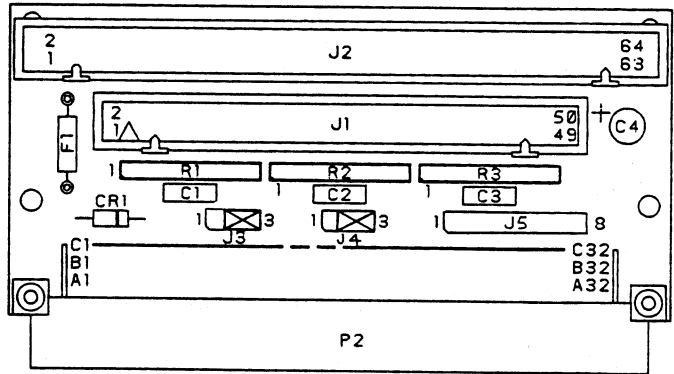
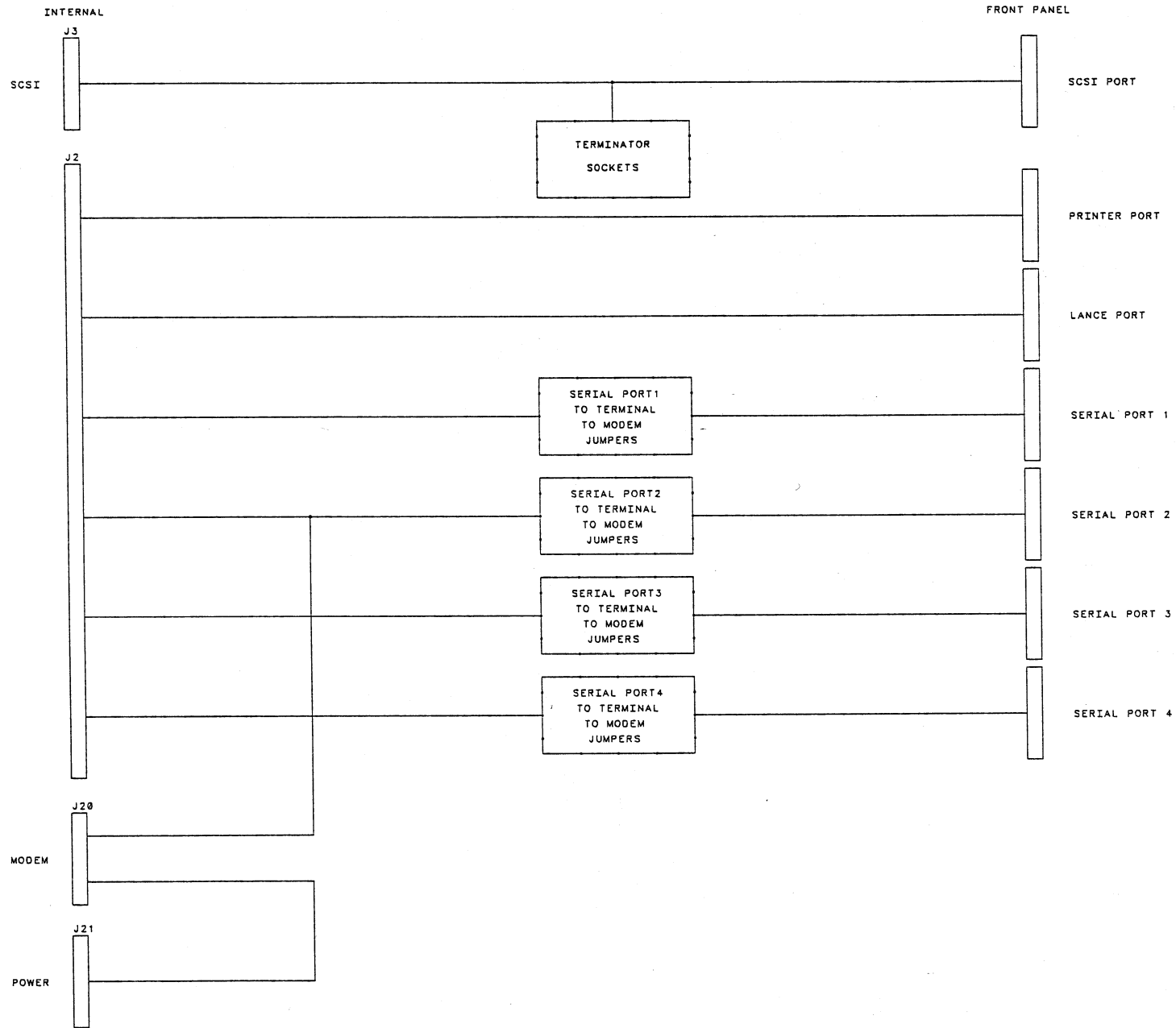


FIGURE 3-2. P2 Adapter Module Parts Location

SCHEMATIC DIAGRAMS

The MVME712M schematic diagram is illustrated in Figure 3-3. The P2 adapter schematic is illustrated in Figure 3-4.



D

C

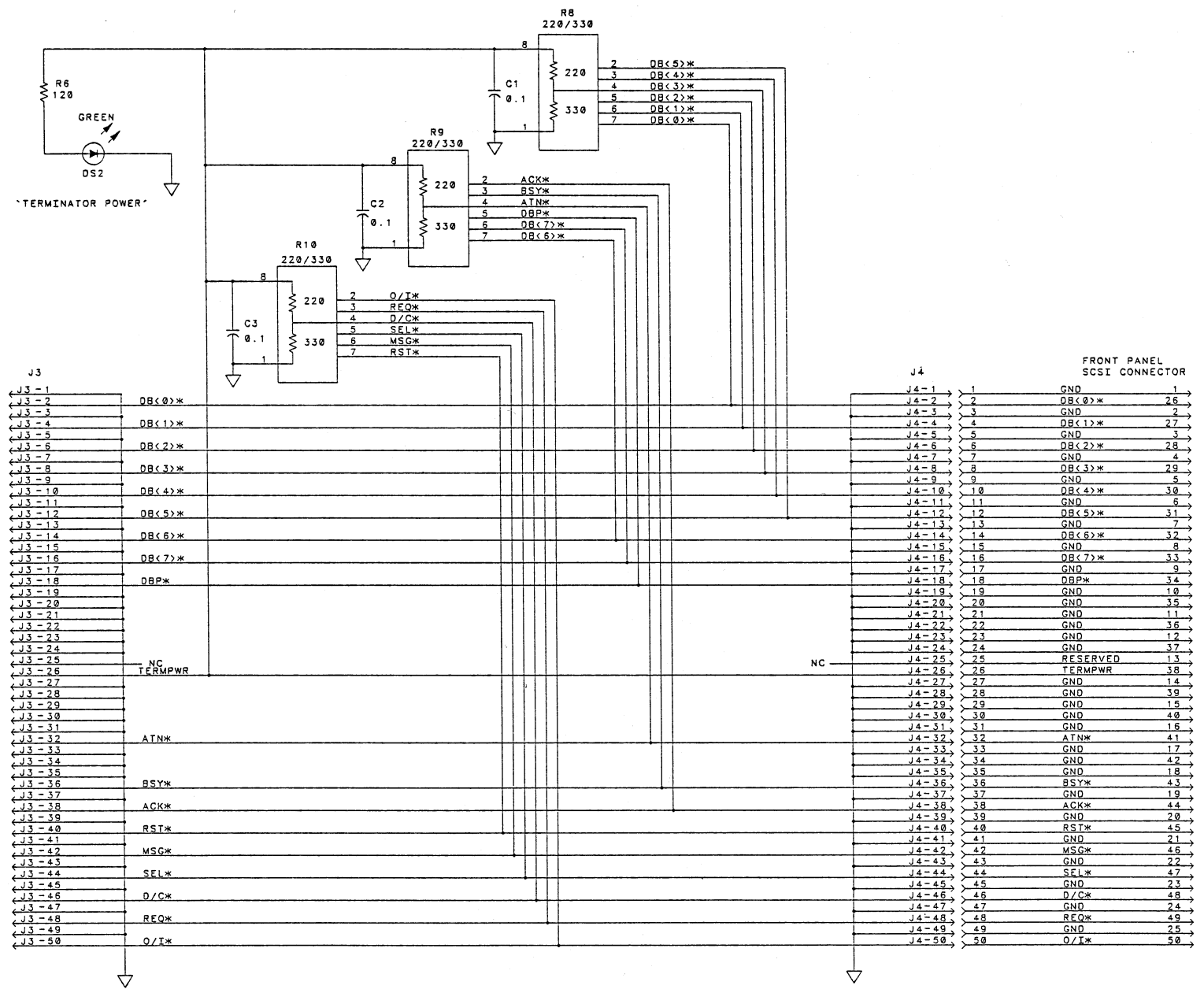
←

B

A

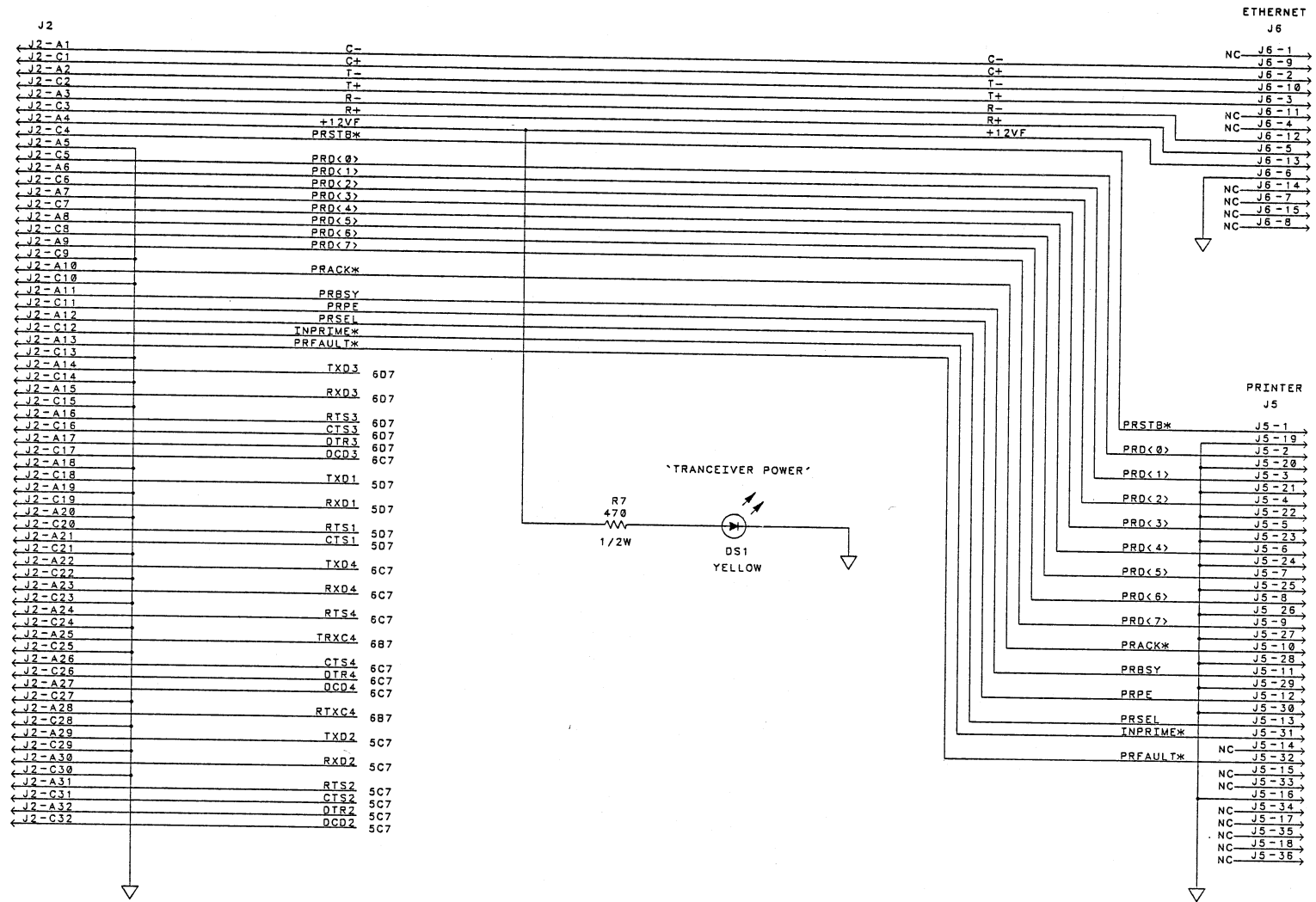
BLOCK DIAGRAM

FIGURE 3-3. MVME712M Schematic Diagram 3-29/3-30



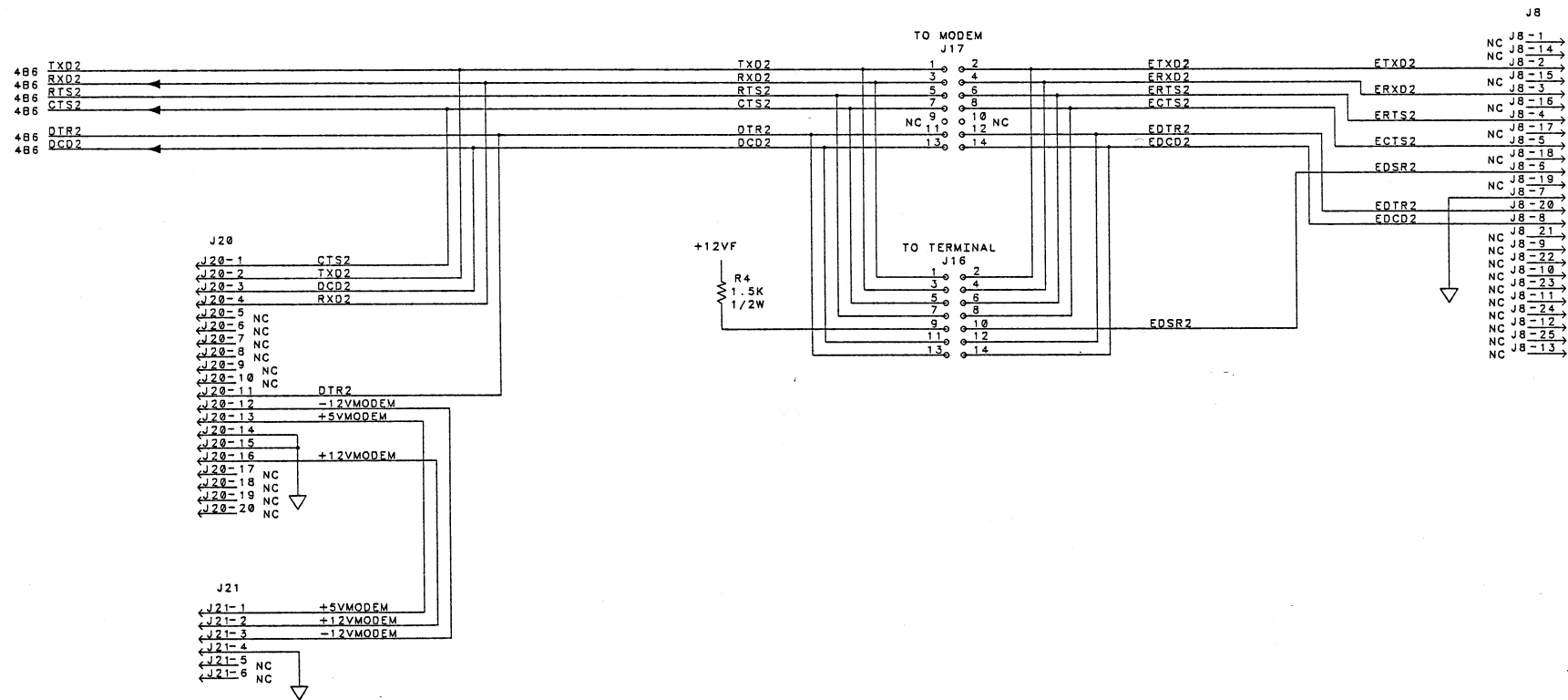
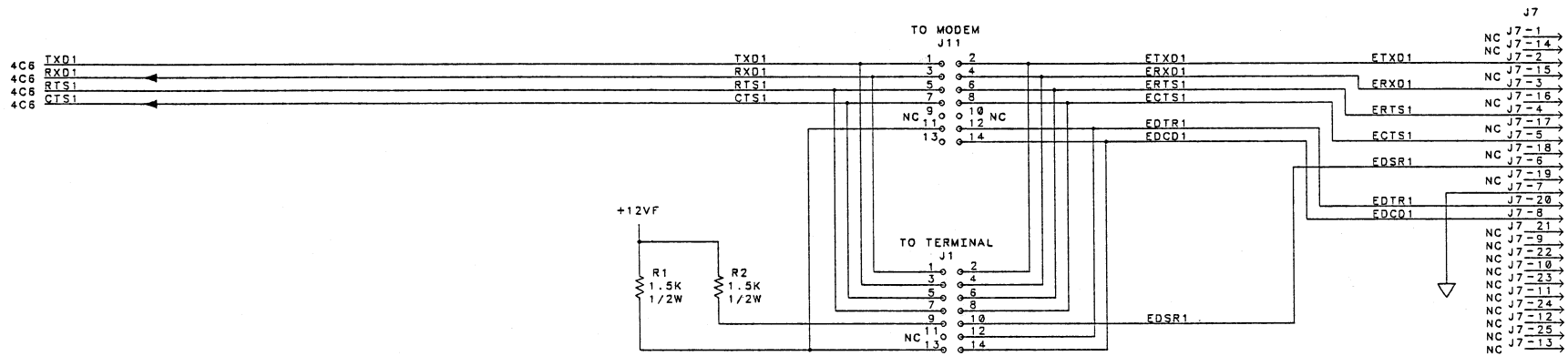
SCSI

FIGURE 3-3. MVME712M Schematic Diagram 3-31/3-32



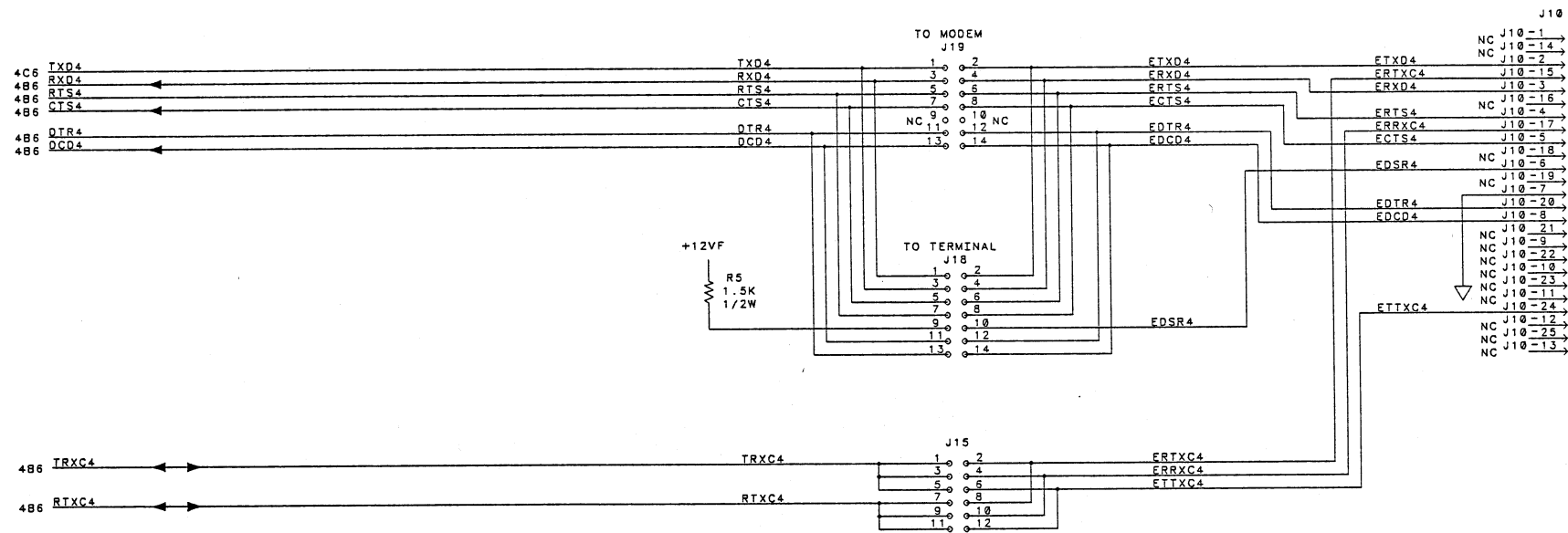
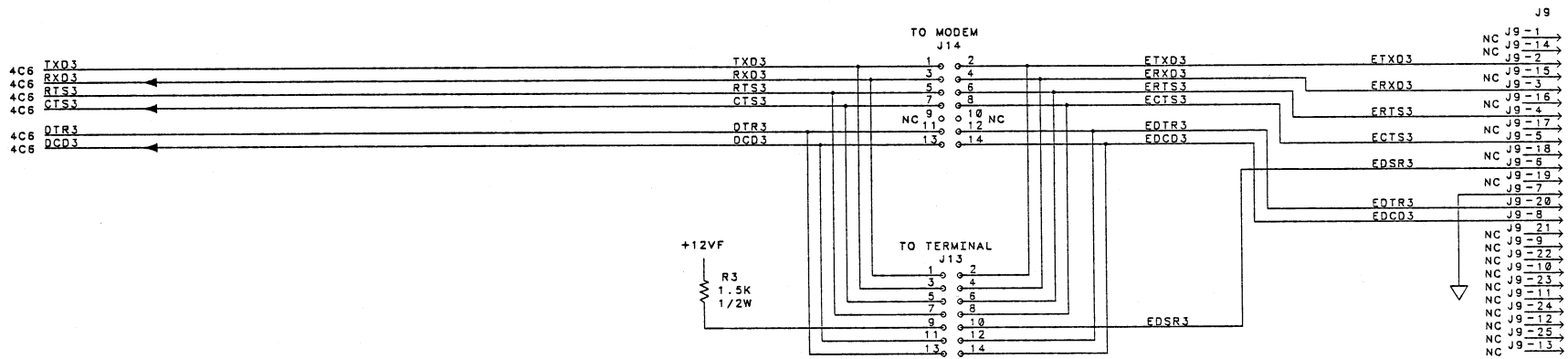
64 PIN CABLE, ETHERNET, AND PRINTER CONNECTORS

FIGURE 3-3. MVME712M Schematic Diagram 3-33/3-34



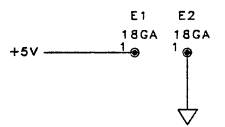
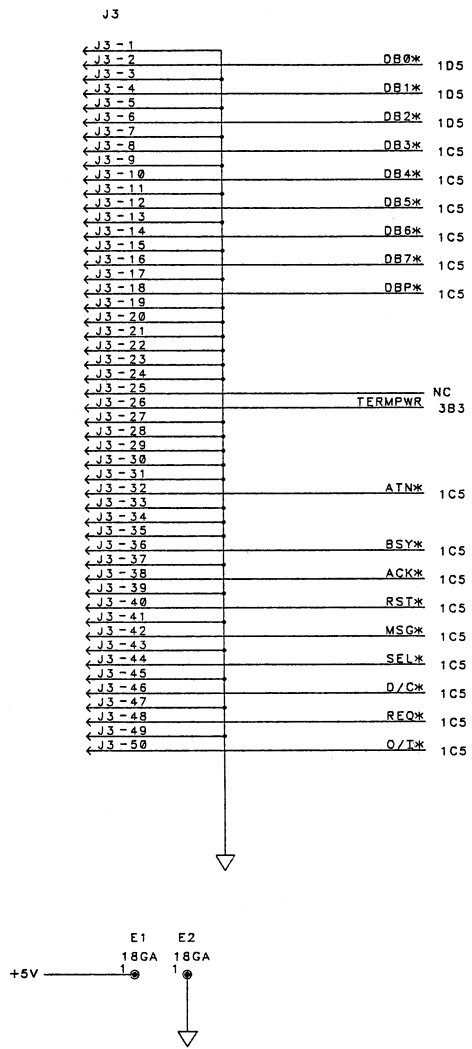
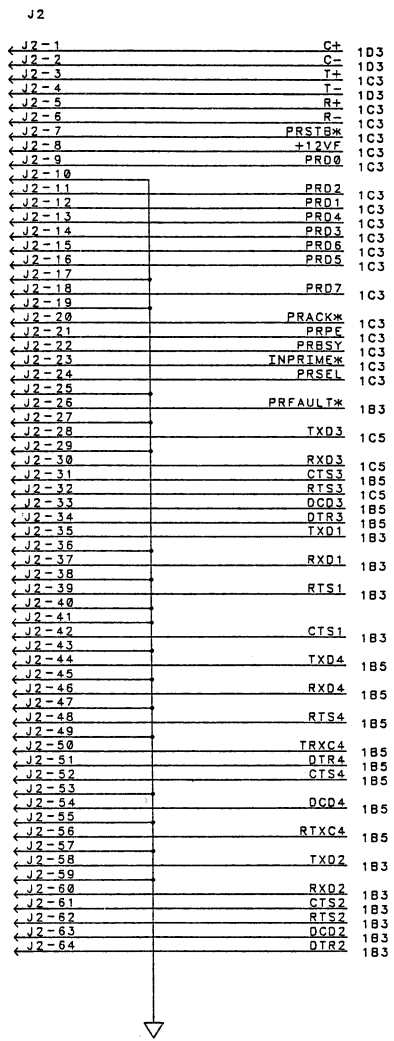
SERIAL PORTS 1 AND 2

FIGURE 3-3. MVME712M Schematic Diagram 3-35/3-36



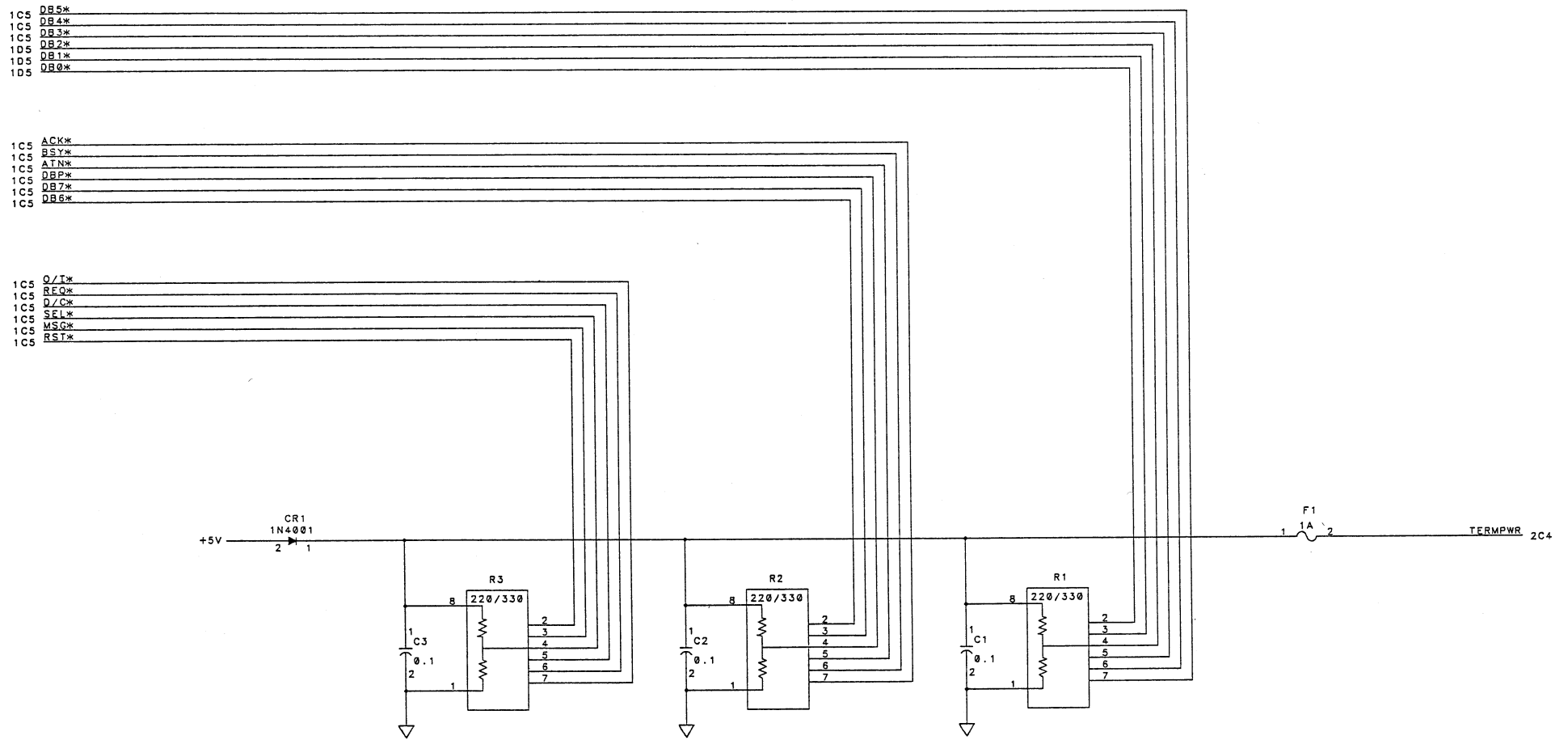
SERIAL PORTS 3 AND 4

FIGURE 3-3. MVME712M Schematic Diagram 3-37/3-38



64 PIN CABLE, SCSI CONNECTORS
63DW3570B0A REV A SH 2 OF 3

FIGURE 3-4. P2 Adapter Schematic Diagram 3-41/3-42



SCSI TERMINATORS
63DW3570B0A REV A SH 3 OF 3

FIGURE 3-4. P2 Adapter Schematic Diagram 3-43/3-44