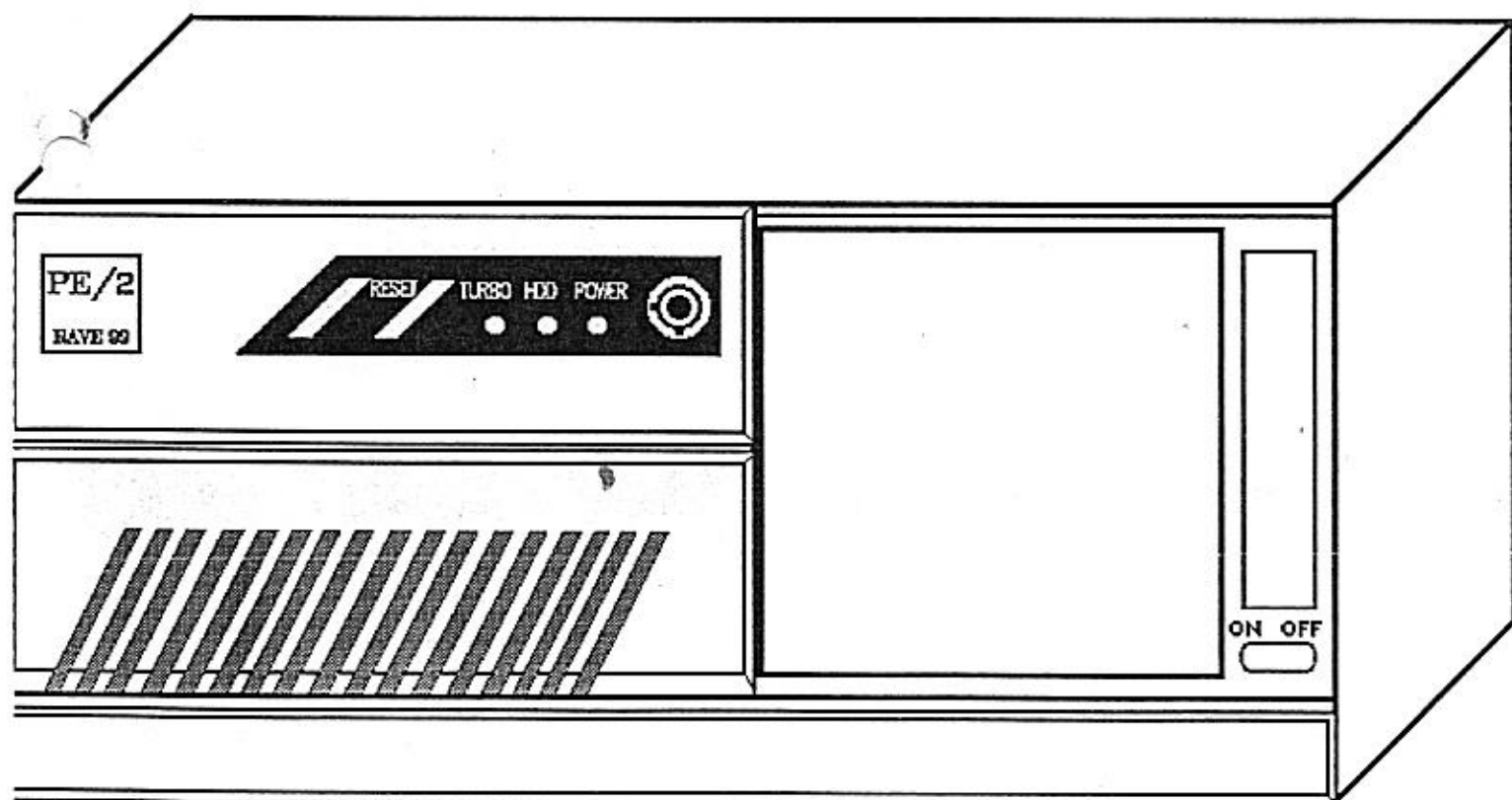


RAVE 99

**Professional
Expansion Chassis
Model PE/2**



Installation and Operating Manual

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Table of Contents

INTRODUCTION	1
SPECIFICATIONS	2
Compatibility	3
Hardware Compatibility	3
P.E. Card Compatibility	3
CLAM SHELL Compatibility	4
Software Compatibility	4
Design of the PE/2 Chassis	5
Overview	5
PE/2 Backplane Layout	7
Installation Instructions	10
Unpacking the PE/2	10
Connecting AC Power	11
Setup for Operation with the TI-99/4A	11
Installation of TI-99/4A into PE/2 Chassis	11
Installation of the RAVE 99 Keyboard Interface	11
Installation of PE/2 Flex Card	11
Setup for Operation with GENEVE Only	12
Setup for Operation with both TI-99/4A & GENEVE	12
Installing Disk Drives	13
Mechanically Installing Disk Drives	13
Connecting Power to the Disk Drives	13
Connecting Data Cables to the Disk Drives	13
Front Panel	14
Lights and Switches	14
Single Computer Operation	16
TI-99/4A or GENEVE	16
Dual Processor Backplane & Operation	17
Appendix A - PE Card Modification Instructions	18
Voltage Regulators	18
GENEVE Modifications	19
MYARC Hard & Floppy Disk Controller	20
TI-RS232 Card Modification	21
TI-32K Card Modification	22
TI-Disk Controller Modification	23
CORCOMP RS232 Card Modification	24
Appendix B - PE/2 Bus Specifications	25

INTRODUCTION

The RAVE 99 Professional Expansion Chassis represents a new approach to organizing your TI-99/4A and GENEVE computer systems into a single enclosure. The Professional Expansion Chassis (PE/2) has a modern computer styling utilizing a space-saving design. The chassis design allows the use of existing TI-99/4A or GENEVE computers, P.E. Box cards, and disk drives into a single enclosure.

A 200 Watt Power Supply provides more than enough power for the computer, P.E. Box cards, and FIVE disk drives. Most existing disk drives configurations will most likely fit into the PE/2 Chassis eliminating all external drives.

The front panel of the PE/2 includes switches and indicator lights for complete control over the system. These include the ON/OFF Power Switch, Keyboard Keylock, Reset Switch, Turbo Switch, Power Indicator LED, Hard Disk LED, and Turbo Indicator LED.

New features include a 36 pin Expansion Bus which allows for future growth with 8 additional line for both DATA and ADDRESS. These features provides the foundation for new products for the TI-99/4A and GENEVE computers for the 90's. Another new feature is our Dual Processor Bus which allows the TI-99/4A and the GENEVE in the same chassis.

The PE/2 Chassis is available in three versions, Model PE/2-A replaces the original TI-Expansion Box, while the Model PE/2-B provides additional space/modifications to allow the TI-99/4A motherboard (computer) to be removed from the TI-99/4A console and installed in the PE/2 Chassis. Model PE/2-C allows both the Geneve and the TI-99/4A to fit into this model at the same time, allowing the keyboard and monitor to be shared. A switch on the front panel selects which computer is connected to the Bus, Keyboard, & monitor.

To get the most from your PE/2 Chassis, first read this manual completely. Also, review the appendices for special information and application.

SPECIFICATIONS

Common to all PE/2 Models

Physical

Size..... 6.5"H X 16"L X 14.5"W

Weight..... 26 Lbs

Drive Bays

Room for 3 accessible 5 1/4" Drives (half height)

Room for 1 accessible 3 1/2" Drive (half height)

(Used to hold keyboard interface card in Model PE/2-Band PE/2-C)

Room for 1 hidden 3 1/2" hard disk drive

Electrical

AC Input Voltage ... 110/220 Volts AC Switch Selectable

Power Supply 200 Watt DC supply with 4 disk drive power connectors

External power plug for monitor

P.E. Box Slots 8

Cooling Fans 2 @ 30 CFM

Front Panel Indicators

Power Green LED

Hard Disk Red LED

Turbo Status ... Yellow LED

Front Panel Switches

ON/OFF power Switch

Keyboard Keylock Switch

Computer Reset Switch

Turbo Mode Switch

Specification Unique to Model PE/2-B

Room for TI-99/4A motherboard

Access to cartridge port from right hand side

Room for RAVE 99 Keyboard Interface Card

Internal "Mini-Flex Cable/card"

Keyboard & Video Connectors available from rear of chassis

Specifications unique to the Model PE/2-C

Dual Processor Bus for both TI-99/4A & GENEVE

Sharing of PE Bus, Keyboard & composite Video Monitor

Compatibility

Hardware Compatibility

The PE/2 Chassis is designed to accept most accessories designed for the TI-99/4A and GE-NEVE computer systems. These includes all P.E. Box cards (some may require minor alteration, see section further in this manual). The model PE/2-B also allows the use of the TI-99/4A motherboard through the use of our new MINI-Flex cable/card. Access is available to the GROM Port, Video Port, Keyboard interface using the RAVE 99 Keyboard interface card, and the joy stick port. Ports not accessible include the cassette and I/O Expansion ports. Any devices normally connected to these will not be available in the PE/2 chassis. A speech adaptor card, sold separately, is available from RAVE 99 Co. which allows the TI Speech Synthesizer Module to be relocated from the I/O port to an expansion slot inside the PE/2.

P.E. Card Compatibility

When the PE/2 chassis was under development, we came to a point where we had to make a design choice which would make the PE/2 100% compatible with the TI Expansion Box but at the expense of about \$100.00 additional cost. The problem lies in the way TI gets it's voltages to the PE cards. The way TI did it, voltage Regulators on the card take an UN-regulated voltage (higher than what's required) and using a regulator on the card, drops the voltage to the correct level. One draw back of this approach is that the REGULATORS consume large amounts of power and cause your cards to run hot. (MYARC's run very hot.)

In the PE/2 Chassis, the voltages required are correct coming out of the power supply and do not require the +/-12 volt REGULATORS on P.E. cards. It is for these reasons, we chose not to add the additional power supplies at additional cost, but to ask that a simple modification be made to the cards which require them. The change simply "SHORTS" out the +/-12 volt regulators on cards that require it. The list below represent all of the cards that have been checked for modification required. The list is not necessarily complete and if you should have a card which is not on this list, please contact RAVE 99 BEFORE installing the card in the PE/2 chassis.

<u>CARDS</u>	<u>MOD's Required</u>
TI-Flex Cable	No
TI-RS232 Card	Yes
TI-32K Card	Yes
TI-Disk Controller	Yes
TI-PCODE Card	No
MYARC Floppy Disk Controller	No
MYARC Hard & Floppy Disk Controller	Yes
MYARC GENEVE Computer	Yes
HORIZON Ramdisk	No
DIGIT AVPC	No
CORCOMP Triple Tech Card	No
CORCOMP RS232 Card	Yes
CORCOMP Floppy Disk Controller	No
RAVE 99 Speech Adaptor Card	No
RAVE 99 MX01 Memory Enhancement Card	No

Complete instructions for making the modifications may be found in appendix A. If you are uncomfortable with doing the changes yourself, RAVE 99 will modify cards for \$5.00 each plus \$3.00 for shipping and handling.

CLAM SHELL Compatibility

The new Expansion Bus used in the PE/2 chassis provides new and exciting features for the future but also present some physical compatibility problems as well. The design of using a second connector next to the original TI 60 pin connector requires changes for PE cards with Clam shells. Either the Clam shell connector opening must be enlarged to accept the second connector or the clam shell be removed altogether. We recommend the complete removal of the clam shell as it allows the PE/2 fans to better cool the cards.

Expansion slots 3,4, and 5, in general have only the original TI 60 pin connector. These slots accept Clam Shells without any modifications.

Software Compatibility

All software original programmed to run on the TI-99/4A and GENEVE computer systems are compatible.

NOTE: Any software which requires the use of accessories connected to ports not available as described in the Hardware Compatibility section will not be compatible.

Design of the PE/2 Chassis

Overview

The PE/2 Chassis is designed to allow you to add accessories to your system in a single, convenient location. The PE/2 contains many different compartments which allow the use of many different type of TI type accessories such as floppy disk drives, Hard disk drives, tape units, and PE Bus Cards. The Model PE/2-B also allows the TI-99/4A motherboard to be located inside the PE/2. This section will familiarize you with the different areas of the PE/2.

As you face the front of the PE/2 (see figure 1), you see the following features of the chassis. Starting in the lower right is the Power ON/OFF switch. Directly above it is the compartment for a 3 1/2" floppy disk drive if Model PE/2-A. The plastic insert must be removed to allow the floppy drive to be installed. The Model PE/2-B/C requires this location for the RAVE 99 Keyboard Interface card and thus can not be used for a floppy drive. To the left of the Power Switch is the main drive bay openings. Here, up to three 5 1/4" drives may be installed. To the upper left of the main drive bays are the lights and switches which controls the operation PE/2.

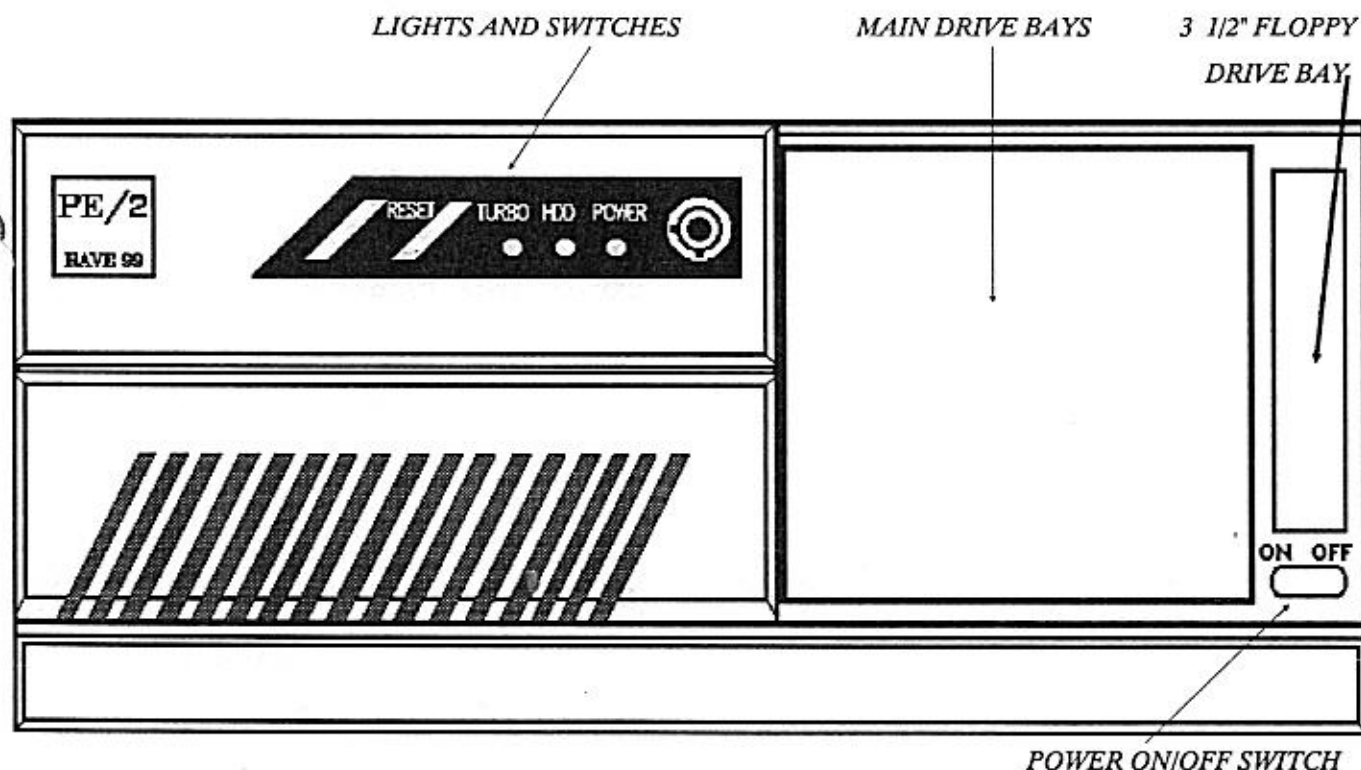


FIGURE 1

The top view of the PE/2 (see figure 2) shows the locations of additional features. The front right shows the 3 1/2" and main drive bays. In the front center is the 3 1/2" Hard disk drive bay. The front left shows the internal cabling that connects the lights and switches to the PE/2 Backplane. Also, this is the location of jumpers that select the different options available on the PE/2. The left rear contains the PE/2 Backplane which accepts the TI P.E. Box cards. The right rear of the PE/2 shows the location of the 200 WATT power supply.

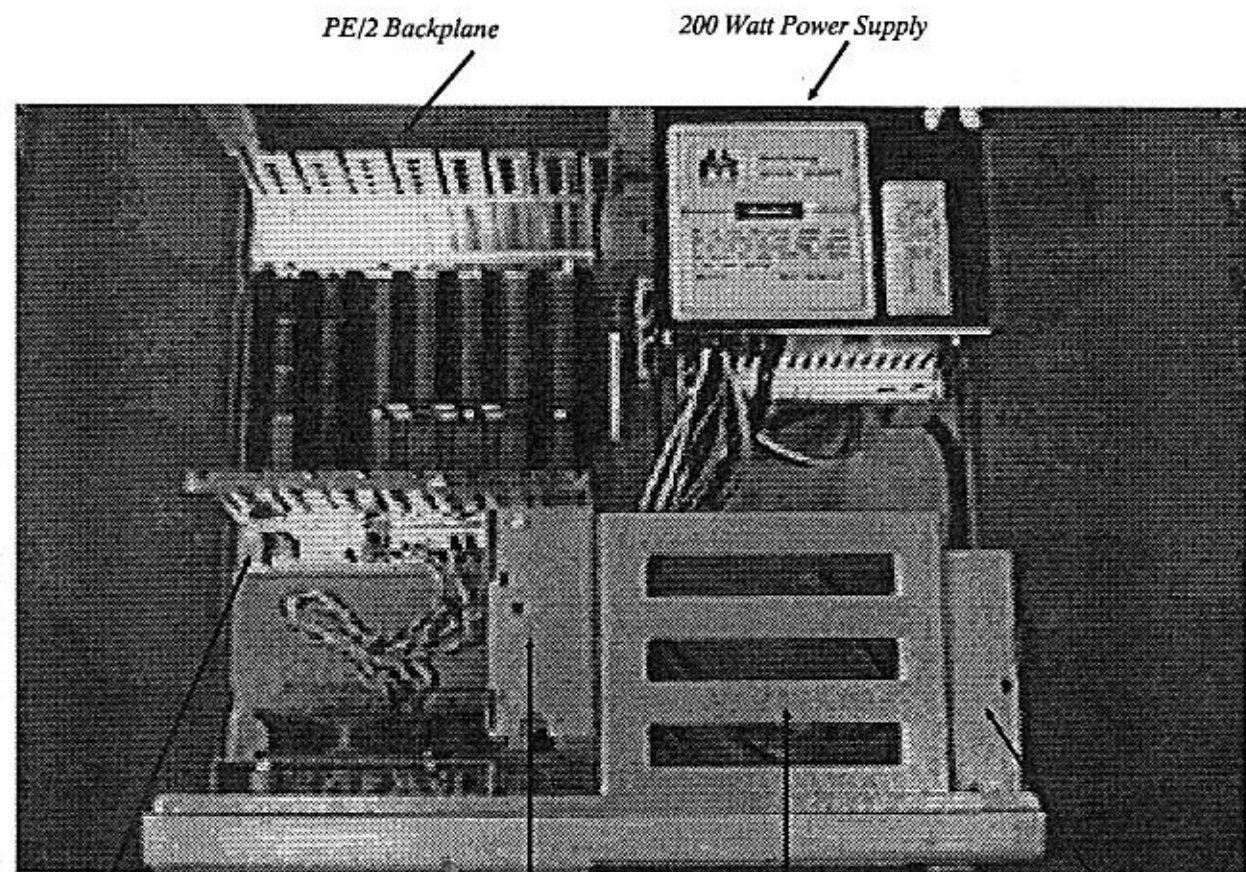


Figure 2

Location of wiring for the lights, switches, and jumpers

3 1/2" Hard Disk Drive Bay

Main Drive Bays

3 1/2" Floppy Drive Bay

These different areas of the PE/2 chassis will be referred to in latter sections. Be sure you are familiar with them before continuing.

PE/2 Backplane Layout

The PE/2 backplane is the main printed circuit board used in the PE/2 chassis. It makes up the 8 slot expansion bus which is where the PE Cards are installed. The PE/2 Backplane also contains electronics, connectors, and jumpers which are used to interconnect the various components and to allow the selection of various features. In general, the connectors and jumpers have been setup for the type system you have ordered and no changes should be required. A description of each of these connectors and jumpers is provided for reference. See Figure 3 and 4.

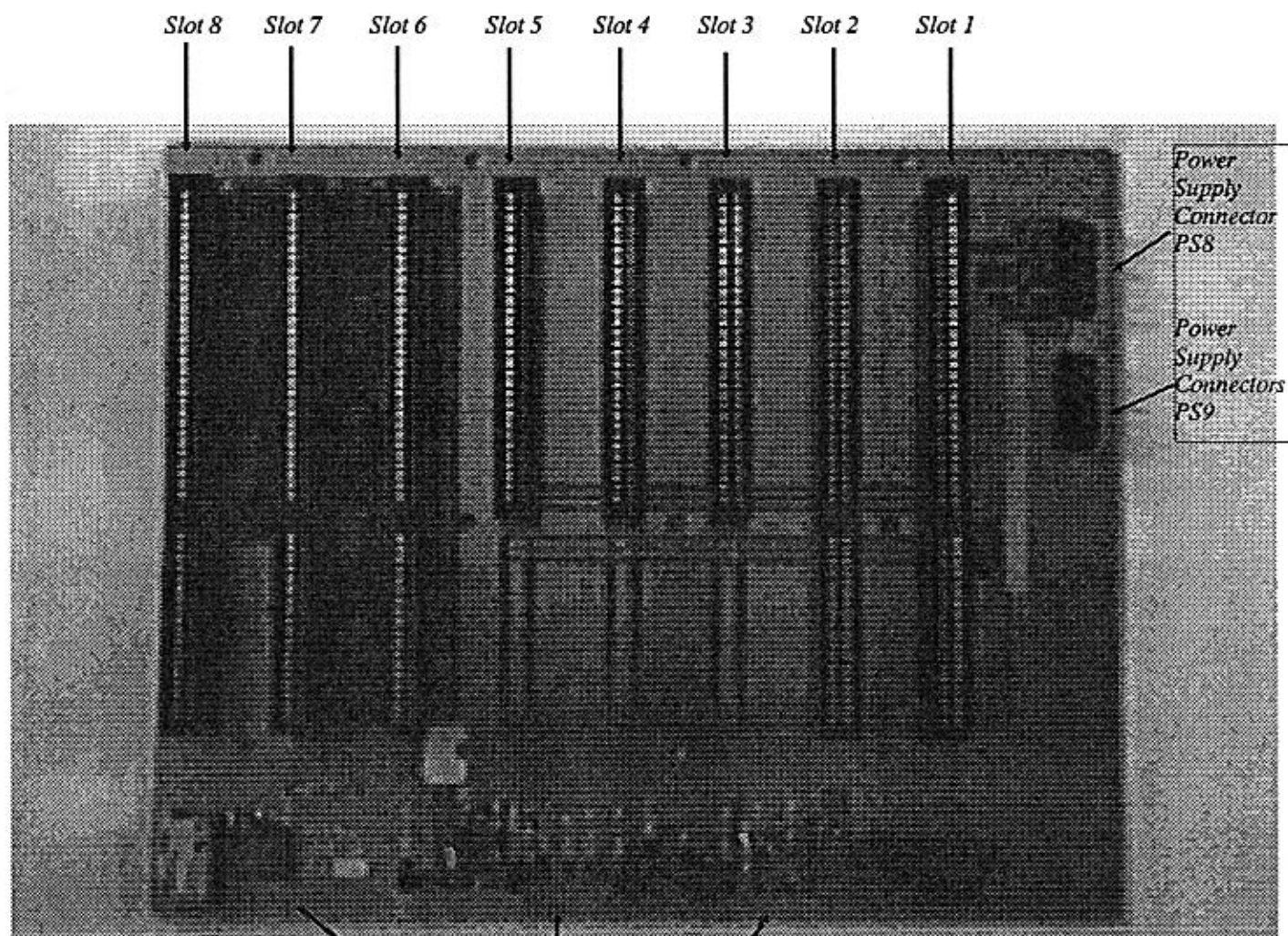
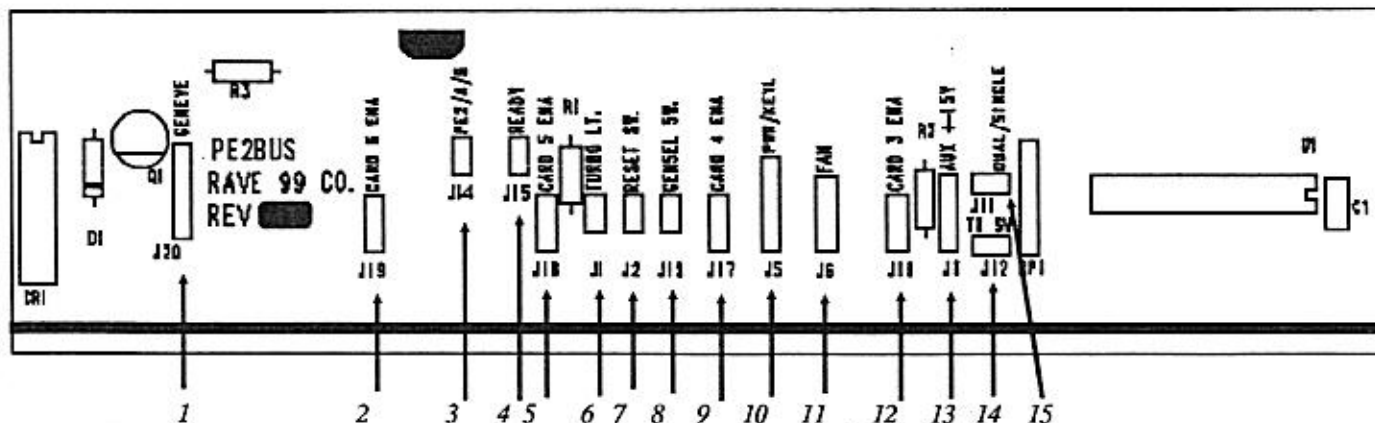


Figure 3

Connectors and Jumpers

Figure 4 below is an enlargement view of the connectors and jumpers used on the PE/2 Backplane. This part of the backplane extends beyond the expansion bus and allows for easy connections to lights and switches. Also, jumpers are used to select different features available on the PE/2 Chassis. Turn the PE/2 power off when working in this area. It is not desirable to change jumper settings or to add or remove connectors with the power on. Removing power also stops the fans in the system. **Keep Fingers and other objects away from the fans when power is on!**

Figure 4



1- J20, GENEVE Connector

This connector is used to connect the GENEVE computer to the PE/2 chassis. It provides connections for the keyboard, Video, and Reset signals. When used with the PE/2-A, this connection is optional. It is required if the KEYLOCK and RESET switches are to be operational.

When used with the PE/2-C in Dual Processor Mode, the GENEVE Keyboard, Video, and Reset signals are routed to the main switching logic which determines which computer has access to the KEYBOARD and MONITOR.

2 - J19, Card 6 Enable Jumper

This jumper is used to select whether the card in slot 6 is a COMMON card or, is use with a TI-99/4A only. Single computer operation (TI-99/4A or GENEVE only) requires that this jumper be in the COMMON position.

Dual Processor operation requires that you select the jumper that matches the type of card being used in that slot. Select COMMON when the card works with both the TI-99/4A and the GENEVE. Examples of these are Disk controllers, RAVE 99 Speech Adaptor, and RS232 cards.

Select TI-99/4A only position when the card only works with the TI-99/4A. Examples of these are the TI-32K card and the RAVE 99 MX01 card.

Pins 1 and 2 are jumpered for COMMON operation.

Pins 2 and 3 are jumpered for TI-99/4A operation only.

3 - J14, PE2/A/B Select

This jumper is used to select the type of PE/2 chassis being used.

Pins 1 and 2 are jumpered for PE/2-A chassis.

Pins 1 and 2 are open for PE/2-B chassis.

4- J15, Ready

This jumper allows the Ready bus line to be under the control of the PE/2 chassis. This allows the Turbo switch to pause the computer when connected to a TI-99/4A. It has no effect when used with the GENEVE computer.

Pins 1 and 2 jumpered to enable Turbo Switch.

Pins 1 and 2 open to disable Turbo Switch.

5 - J18, Card 5 Enable Jumper Same as item 2 except works on slot 5.

6 - J1, Turbo Light Connector

The Turbo Light harness is wired to this connector. The yellow wire goes to pin 1.

7- J2, Reset Switch Connector

The Reset Switch harness is wired to this connector. The purple wire goes to pin 1.

8 - J13, GENEVE/TI-99/4A Connector

The GENEVE/TI-99/4A switch harness is wired to this connector. The RED wire goes to pin 1. When used as a single computer system, this jumper is unused.

Pin 1 and 2 jumpered selects the TI-99/4A.

Pin 1 and 2 open selects the GENEVE.

9 - J17, Card 4 Enable Jumper Same as item 2 except works on slot 4.

10 - J5, Power/KeyLock Connector

Power/Keylock harness is wired to this connector. Green wire goes to pin 1, gray to pin 3.

11 - J6, Fan Connector

The 12 Volt fan harness is wired to this connector. The RED wire goes to pin 1.

12 - J16, Card 3 Enable Jumper Same as item 2 except works on slot 3.

13 - J9, Aux +/- 15 volt Power Inputs.

Reserved for future use. DO NOT USE. LEAVE OPEN!

14 - J 12, Turbo Switch Connector

The Turbo Switch harness is wired to this connector. The blue wire goes to pin 1.

15 - J11, Dual/Single Selector

This jumper is used to select either Dual or Single Computer Operation. Model PE/2-A and PE/2-B select single. Model PE/2-C being used with only the TI-99/4A selects single. Model PE/2-C being used with both computers selects Dual.

Pins 1 and 2 jumpered for SINGLE operation.

Pins 1 and 2 open for DUAL operation.

Installation Instructions

Unpacking the PE/2

Before removing the PE/2 from the carton, check the box for evidence of shipping damage or mishandling. If you find any evidence of damage, immediately notify the carrier and RAVE 99 Co.

1. Remove the PE/2 Chassis from the carton by holding the bottom of the carton and lifting the PE/2 chassis straight up.
2. Place the PE/2 with the packing material on a table or any other convenient flat surface.
3. Remove the packing material carefully. (Save the packing material for storing or transporting of the PE/2.)
4. Using a philips head screw driver, remove the four screws holding the cover on the PE/2 chassis.
5. Check the parts packs with the PE/2 to be sure they include the following:

All Models

- o Power Cord
- o Bag of screws
- o Two Keys
- o Two Plastic Drive Opening Covers

Model PE/2-B and PE/2-C only

- o PE/2 Flex-Interface Card
- o MINI-Flex Cable
- o Keyboard Interface Adaptor Plate
- o 15 Pin Keyboard Extension Cable
- o TI Internal Keyboard cable
- o TI Internal Sound/Video cable
- o GROM Port Adaptor Card
- o GROM Port Extension Cable

Model PE/2-C only

- o Geneve External Keyboard/ video/sound cable

If any of these parts are missing or damaged, contact the store where you purchased the PE/2 or RAVE 99 Co.

Connecting AC Power**WARNING !!****Failure to select the proper voltage for operation WILL DAMAGE YOUR PE/2 CHASSIS !!!**

The Power Supply located in the PE/2 is switch selectable for either 110 or 220 Volts AC operation. This switch is located on the rear of the chassis and **MUST** be set to the correct voltage for your use. **INCORRECT** selection of this switch **WILL DAMAGE** the PE/2 if power is then applied. **DOUBLE CHECK** before plugging the PE/2 into a wall outlet.

To select the correct voltage, locate the black switch on the back of the PE/2 as shown in Figure 5. The voltage selected is shown on the switch for this position. If this is correct, you are done. If not, move the black portion of the switch left or right until the correct voltage is displayed.

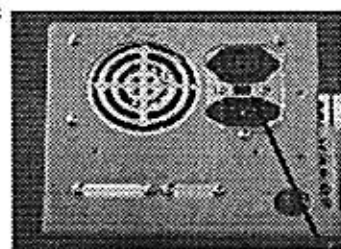


FIGURE 5
Voltage Selector Switch

Setup for Operation with the TI-99/4A**Installation of TI-99/4A into PE/2 Chassis**

- A) Remove 4A computer from TI-99/4A Console
- B) Install "Mini Flex-cable" to 4A computer I/O Port
- C) Slide 4A computer into 5 1/4" drive opening with the Mini Flex-Cable towards the rear.
- D) Install the cartridge extender cable to the 4A computer
- E) Install the 15 pin extender cable to the 4A
- F) Install the monitor internal cable to the 4A

Installation of the RAVE 99 Keyboard Interface

(Note: Skip to "installing Disk Drives before proceeding with this step.)

- A) Mount the KB Interface card to adapter plates
- B) Connect 15 pin cable to extender cable
- C) Connect Load/Reset cable if used
- D) Install adaptor plate into 3 1/2" drive bay
- E) Install internal KB cable to Interface Card
- F) Connect 4A Power Plug to JC3 of the RAVE 99 Keyboard Interface Card.

Installation of PE/2 Flex Card

- A) Install the PE/2 Flex Card into the 1st slot in the PE/2 backplane
- B) Connect the Internal Monitor Cable to J9 of the PE2FLX card.

- C) Connect the Internal KB cable to J7 on PE2 FLEX card.
- D) Connect PE/2 Power plug PS9 to PS9 on Flex Card.
- E) Connect KB Power plug to J6 on Flex Card.
- F) Connect External Monitor Cable to the Video port on Flex card, J10.
- G) Connect External Keyboard Cable to the Keyboard port on the Flex card, J5.

Setup for Operation with GENEVE Only

- A) Modify GENEVE as show in Appendix A
- B) Install GENEVE in one of the first 6 slots of the backplane
- C) Install GENEVE adaptor Harness #1 if reset and keylock switch is desired.
- D) Connect External monitor cable to the Video port of the GENEVE.
- E) Connect External keyboard cable to the Keyboard port of the GENEVE.

Setup for Operation with both TI-99/4A & GENEVE

- A) Follow Setup instructions for operating with TI-99/4A
- B) Modify GENEVE as described in Appendix A
- C) Install GENEVE in slot 7 of PE/2 backplane
- D) For single keyboard operation, install the GENEVE adaptor harness #2.
 - Plug P1 to keyboard port of the GENEVE.
 - Plug P3 to J20 on the PE/2 backplane.
- E) For separate monitor operation, connect external monitor cable to Video port of the GENEVE.
- F) For single monitor operation (composite video only).
 - Plug P2 of the GENEVE Adaptor Harness #2 to the Video port on the GENEVE.
 - Connect the external monitor cable to the Video port on the Mini-Flex Card.

Installing Disk Drives

Installing disk drives may be divided into three steps. First, mechanically installing the drive, second, connecting power to it, and third, connecting the data cables.

Mechanically Installing Disk Drives

Due to the construction of the PE/2 Chassis, Drives need to be installed in a specific order. 5 1/4" Drives need to be installed first. Metal "TABS" are provided to support these drives, but they also must have mounting screws installed. These screws are installed on the side of the drives and must be installed before either of the 3 1/2" drives, or RAVE 99 Keyboard Interface.

The PE/2 Chassis has an opening for a 3 1/2" hard disk. Removal of the Backplane card guide allow easy insertion of this drive. This drive is secured using screws from the top and bottom supports.

There is room for a 3 1/2" floppy disk drive on the right-hand side of the chassis as long as it is not being used for the RAVE 99 Keyboard interface Card. To install a 3 1/2" drive, the plastic filler panel must be removed. After this is done, the drive is inserted into the opening from the front. The drive is secured by screws at the top and bottom supports.

Connecting Power to the Disk Drives

After the drive have been installed mechanically, the drive need to have the power connected to them. Connectors on the power supply provide for this. These connectors are KEYED so that they can only go together the correct way. Start connecting the power cables to the lowest drives first and then work your way to the top most. All of the power connectors are the same and it makes no difference which one goes to any drive.

Connecting Data Cables to the Disk Drives

The PE/2 chassis in no way effects the way the Data cables are used to connect the disk controller to the disk drives. Use your existing data cables and follow the recommended cabling method described in your disk controller manual.

We suggest that the disk controller card be installed in slot 1 for Model PE/2-A and slot 2 for Model PE/2-B/C. This allows the data cables to easily cross over the Flex-Card used in the PE/2-B/C.

Front Panel

Lights and Switches

The PE/2 has controls on the front of the chassis for quick and easy adjustments. Familiarize yourself with each of the controls and what functions each performs. See figure 6.

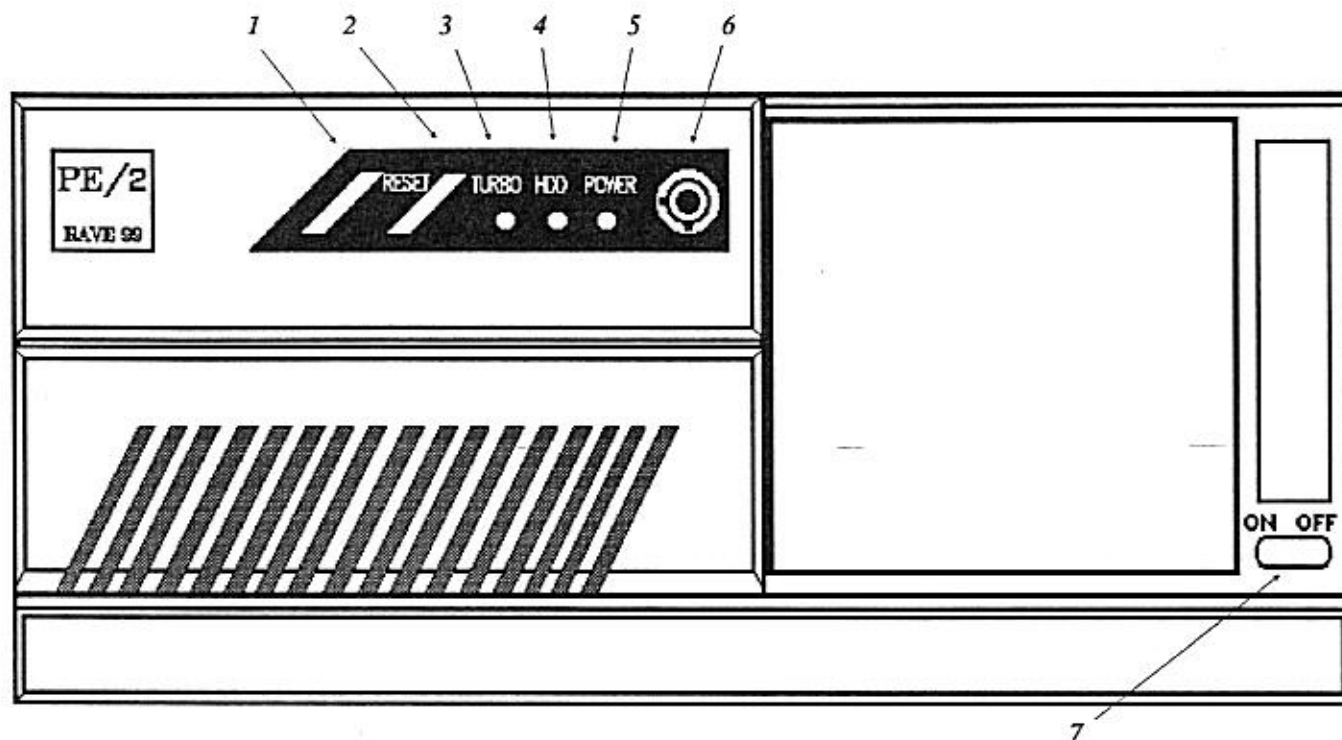


FIGURE 6

1- RESET SWITCH

Used to RESET the computer. For single computer operation, the computer in the PE/2 will be RESET by pressing this switch if all of the required cabling has been installed and modifications to the GENEVE computer have been made.

When Dual Computer operation is being used (Model PE/2-C only), the computer which is currently selected as active will be reset by this switch. The inactive computer is not reset.

2- TURBO SWITCH

Used to PAUSE the TI-99/4A computer in either single or dual processor operation. This switch has no effect when used with the GENEVE at this time. The GENEVE does not look at the READY line which is why the PAUSE could not be implemented on it.

3- TURBO INDICATOR

Used to show the bus activity. With the new design of the PE/2 chassis, the LED on the PE cards can not be seen unless the cover is removed. To provide some indication of the activity taking place within the cards, this light reflects the status the cards in the PE/2 chassis. The light goes ON whenever any card is ON and is OFF when ALL card are off. Think of

this light as the computer activity indicator. This indicator is displaying the status of the active computer in a dual processor configuration.

4- HDD INDICATOR

The Hard Disk Drive indicator is connected to a hard disk drive and indicates when the drive is being accessed.

5- POWER INDICATOR

When the power is ON, this indicator is lit.

6- KEYBOARD KEYLOCK SWITCH

Used to disable the keyboard. This operation may be important if unattended operation is used. All of the proper cabling must be installed for operation. This switch is always active even is dual processor configuration is being used.

7- POWER SWITCH

Used to turn the PE/2 power ON and OFF. The switch in the depressed position is ON. Pressing this switch again causes it to release and turn the PE/2 OFF.

Single Computer Operation

TI-99/4A or GENEVE

Dual Processor Backplane & Operation

The Model PE/2-C Chassis is designed to work with Dual computers in the same Chassis. The system works as follows. The special Mini-Flex cable provided in the PE/2-B model has special logic which allows it to disconnect the TI-99/4A from the expansion bus. Similar logic is provided between the sixth and seventh connector on the expansion bus. These last two slots have the ability to disconnect themselves from the rest. This is where the GENEVE computer must be located if being used with a TI-99/4A also. If the system is being used with only a single computer, then the seventh and eight slots are available as normal expansion slots. Expansion slots 2 thru 6 provide locations for common cards (ie disk controller, RS232 card, RAMDISKS, RAVE speech Adapter, etc). Slot 1 is used for the MINI-Flex cable/card and plugs into both bus connectors.

PE Slots 3 thru 6 may be configured thru the use of a jumper to designate the slot as being assigned for only TI-99/4A operation or both. This is required for those cards which must be disabled when the GENEVE computer is selected. Examples of these cards include the TI-32K card and RAVE MX01 card.

Appendix A - PE Card Modification Instructions

Voltage Regulators

All of the cards which require modification require it because it has on it either a 7812 or 7912 voltage regulator shown below in figure 7. Each of these device has three terminals coming out from them but they do not have the same function. Check closely when modifying a board that you have located the correct regulator and which type it is.

The function of these regulators is to drop the incoming voltage V_{in} to the correct voltage
modified regulators

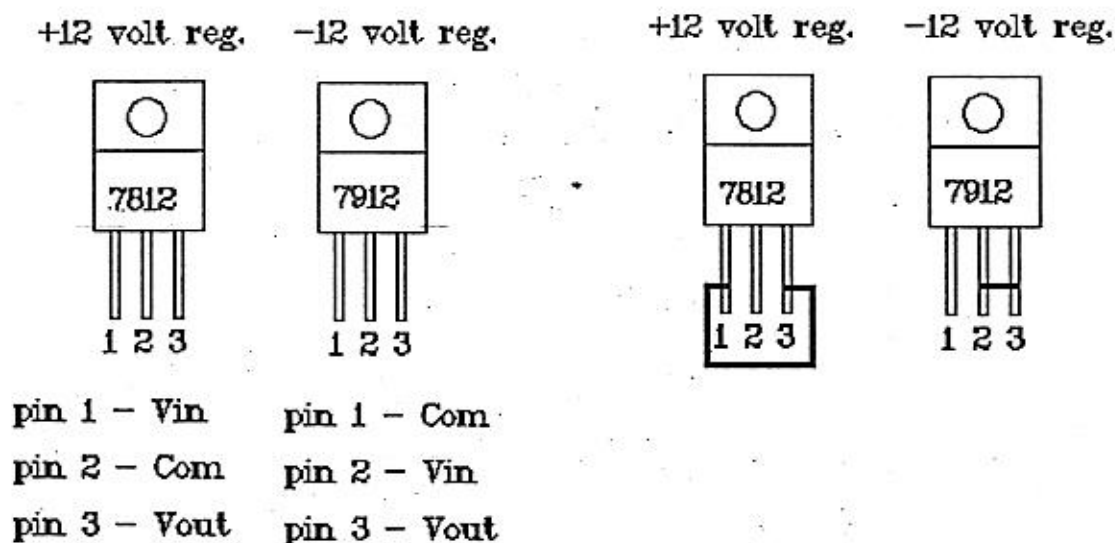


FIGURE 7

V_{out} . This is required in a TI-PE Box because the voltage coming in is unregulated and may be twice the amount required. In the RAVE 99 PE/2 Chassis the incoming voltage V_{in} is already at the correct voltage and does not require any regulating. This is why the modification for these cards is to add a jumper from the V_{in} pin to the V_{out} pin of the regulator as shown in figure 7. This jumper is best added to the solder side of the card but care must be taken to insure that you have located the right pins. Remember that when you look at the solder side of the card, the pins count the other direction.

Some of you may be wondering why not leave the voltage regulators alone and let the regulator pass V_{in} to V_{out} . The answer is that the type of regulators used typically require that V_{in} be at least 1.4 volts above V_{out} . If V_{in} is not 1.4 volts above V_{out} , V_{out} will drop below V_{out} to maintain regulation. Depending on the specific card and what it uses the V_{out} for, not modifying a card has been tried and worked but it is not considered a general solution. We do not suggest that you try this. Please make the modification to the cards as we have indicated in this manual.

WARNING !!!!

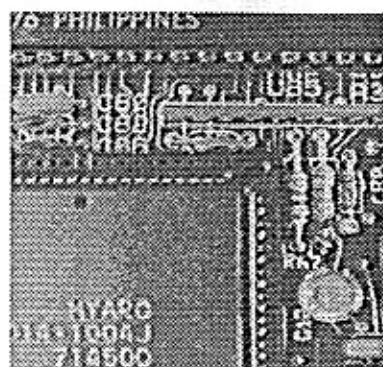
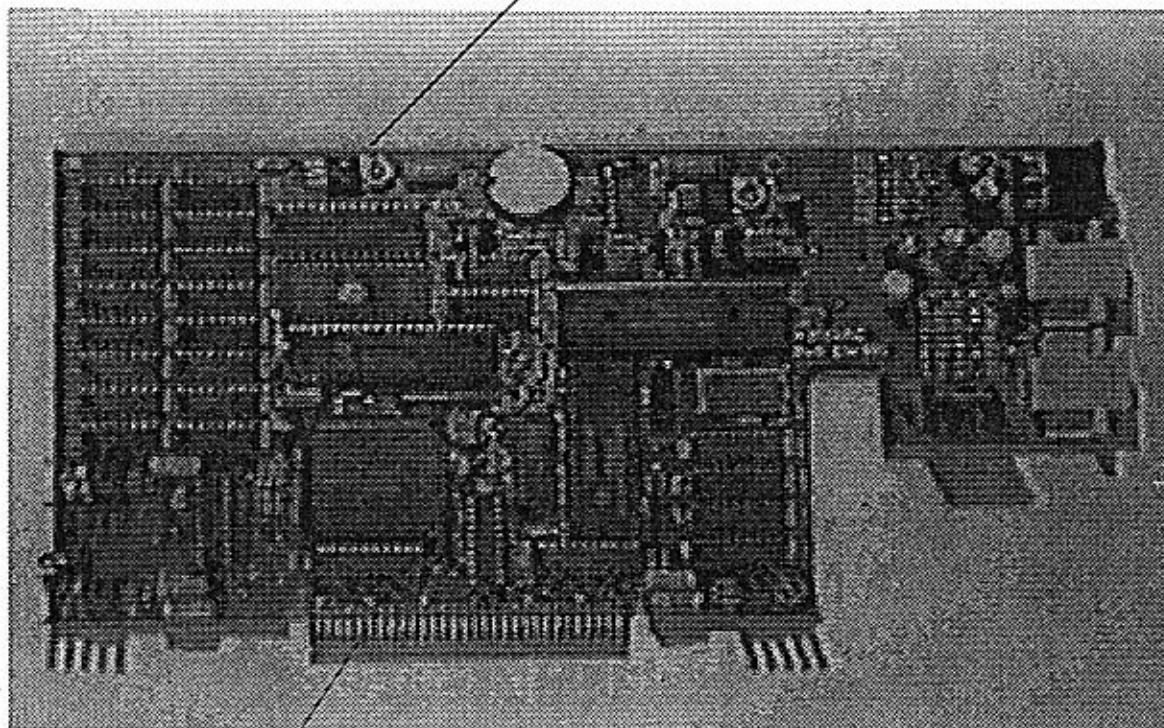
After the cards are modified, they must be labeled with an identifying sticker that they must only be used in a RAVE 99 PE/2 Chassis. Putting a modified PE card back into a TI-PE Box will definitely destroy it. Please don't forget and destroy a card. It will only take 1 Second.

GENEVE Modifications

The GENEVE computer requires that one 7812 voltage regulator be jumpered. Also, if the computer RESET switch is to be functional, the RESET wire from the HARNESS must be attached to the GENEVE as shown below.

After making the modification, be sure to label the card for use in only the PE/2 type expansion chassis.

This is the 7812 voltage regulator. Install jumper between pins 1 and 3.



Attach RESET wire from harness to this point.

Blow-up of RESET circuitry.

MYARC Hard & Floppy Disk Controller

The MYARC Hard & Floppy Disk Controller requires that only one 7812 voltage regulator be jumpered. See picture below for location.

After making the modification, be sure to label the card for use in only the PE/2 type expansion chassis.

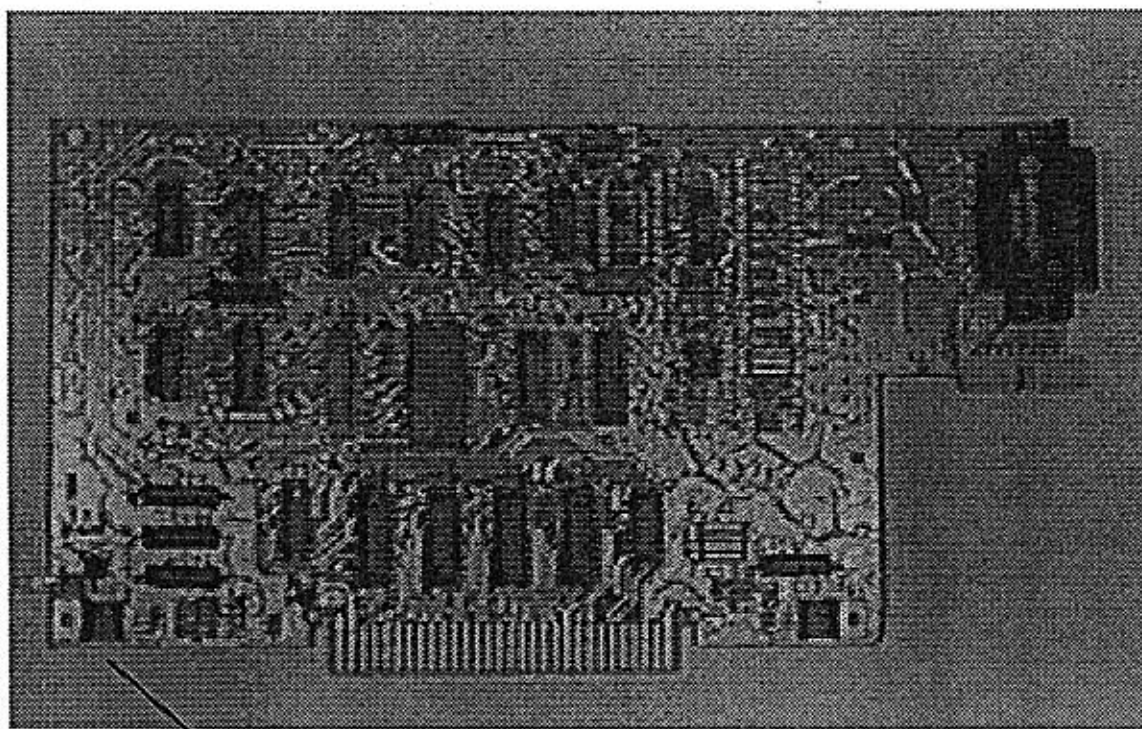


This is the 7812 voltage regulator. Jumper between pin 1 and 3.

TI-RS232 Card Modification

The TI-RS232 Card requires that only one 7812 voltage regulator be jumpered. See picture below for location.

After making the modification, be sure to label the card for use in only the PE/2 type expansion chassis.

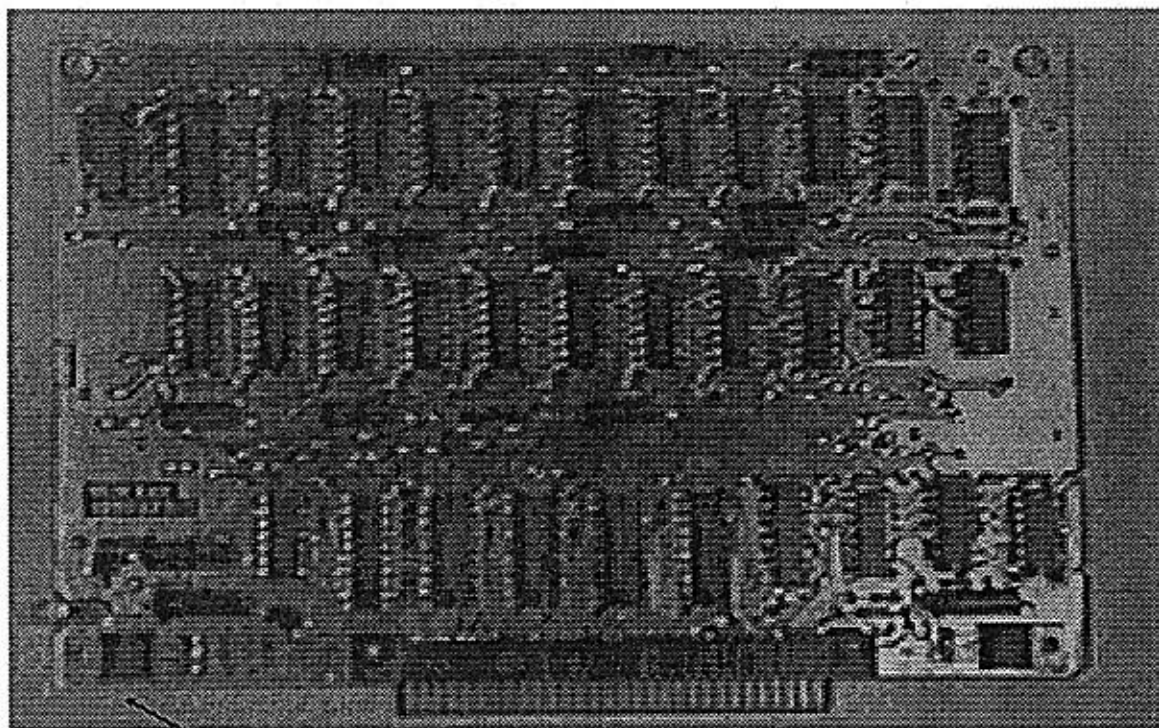


This is the 7812 voltage regulator. Jumper between pin 1 and 3.

TI-32K Card Modification

The TI-32K Card requires that one 7812 voltage regulator be jumpered. See picture below for location.

After making the modification, be sure to label the card for use in only the PE/2 type expansion chassis.

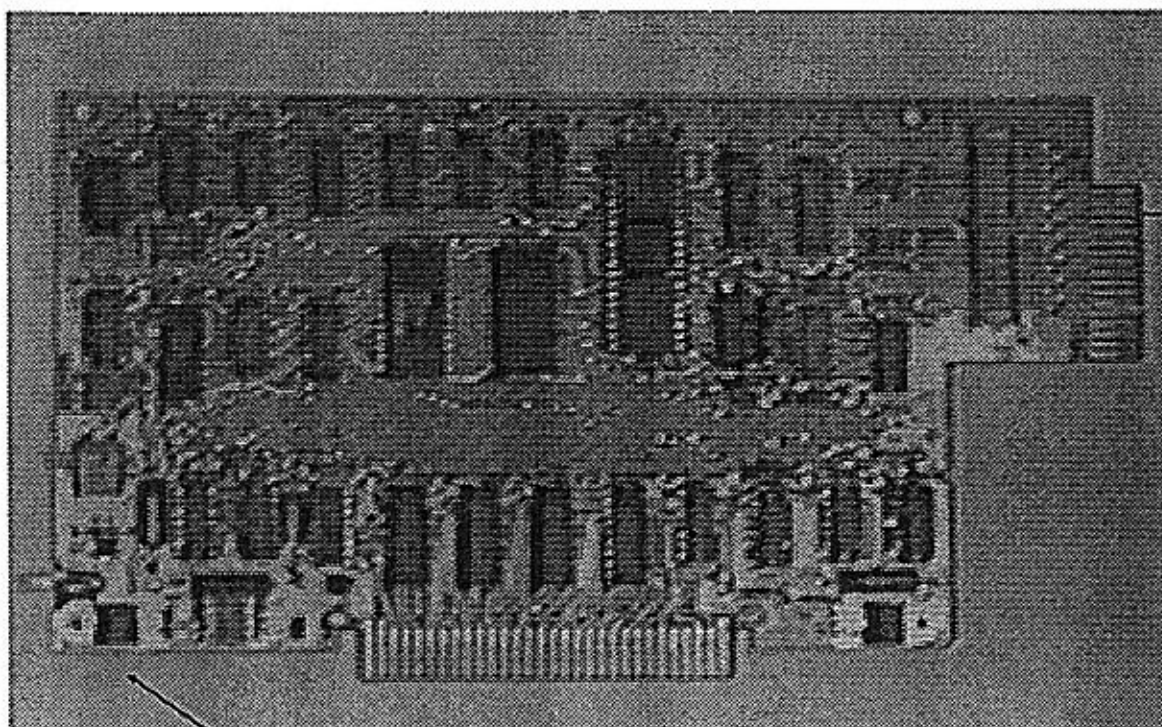


This is the 7812 voltage regulator. Jumper between pin 1 and 3.

TI-Disk Controller Modification

The TI-Disk Controller requires that one 7812 voltage regulator be jumpered. See picture below for location.

After making the modification, be sure to label the card for use in only the PE/2 type expansion chassis.

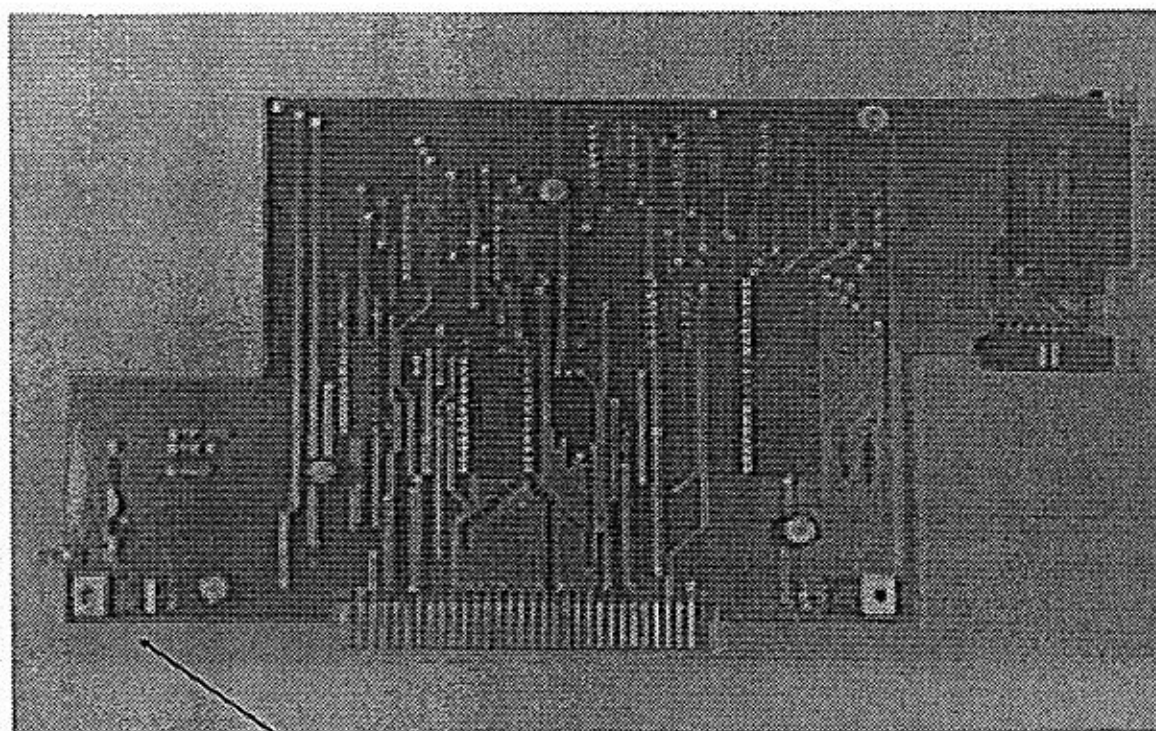


This is the 7812 voltage regulator. Jumper between pins 1 and 3.

CORCOMP RS232 Card Modification

The Corcomp RS232 card requires that one 7812 voltage regulator be jumpered. See picture below for location.

After making the modification, be sure to label the card for use in only the PE/2 type expansion chassis.



This is the 7812 voltage regulator. Jumper between pins 1 and 3.

Appendix B - PE/2 Bus Specifications

Looking into connector from the component side - pin 1 towards rear of chassis

Plus 12 Volts Reg.	+12V	2	1	+12V	Plus 12 Volt Reg.
Ready A	READY A	4	3	GND	Logic Ground
Computer Reset	RESET	6	5	GND	Logic Ground
System Clock	SCLK	8	7	GND	Logic Ground
Audio	AUDIO	10	9	LCP	CPU Indicator
PCB Enable	PCBEN	12	11	RBDENA	Remote Data Bus Control
IAQ Hold A	IAQHA	14	13	HOLD	CPU Hold Request
Inter. Level B	SENILB	16	15	SENILA	Inter. Level A Sense Enable
Load Interrupt	LOAD	18	17	INTA	Inter. Level A
Logic Ground	GND	20	19	D7	System Data Bit 7
System Data Bit 6	D6	22	21	D5	System Data Bit 5
System Data Bit 4	D4	24	23	D3	System Data Bit 3
System Data Bit 2	D2	26	25	D1	System Data Bit 1
System Data Bit 0	D0	28	27	GND	Logic Ground
System Address Bit 15	A15/CRU	30	29	A14	System Address Bit 14
System Address Bit 13	A13	32	31	A12	System Address Bit 12
System Address Bit 11	A11	34	33	A10	System Address Bit 10
System Address Bit 09	A09	36	35	A08	System Address Bit 08
System Address Bit 07	A07	38	37	A06	System Address Bit 06
System Address Bit 05	A05	40	39	A04	System Address Bit 04
System Address Bit 03	A03	42	41	A02	System Address Bit 02
System Address Bit 01	A01	44	43	A00	System Address Bit 00
System Address Bit A	AMA	46	45	AMB	System Address Bit B
System Address Bit C	AMC	48	47	GND	Logic Ground
CPU Clock	CLKOUT	50	49	GND	Logic Ground
DATA Bus Direction	DBIN	52	51	CRUCLK	CRU Clock
CPU Write Enable	WE	54	53	GND	Logic Ground
Memory Request	MEMEN	56	55	CRUIN	CRU Input Data
Minus 12 Volts Reg.	-12V	58	57	-12V	Minus 12 Volts Reg.
Plus 12 Volts Reg.	+12V	60	59	+12V	Plus 12 Volts Reg.

Plus 5 Volts Reg.	+5V	2	1	+5V	Plus 5 Volts Reg.
Minus 12 Volts Reg.	-12V	4	3	-12V	Minus 12 Volts Reg.
Sound Out Geneve	SNDOUTG	6	5	GENSEL	Geneve/4A Select Line
Key Lock Switch	KEYLSW	8	7	VIDOUTG	Video Out Geneve
Extra Bit #10	XB10	10	9	XB9	Extra Bit #9
System Address Bit G	AMG	12	11	AMF	System Address Bit F
System Address Bit I	AMI	14	13	AMH	System Address Bit H
System Address Bit K	AMK	16	15	AMJ	System Address Bit J
System Address Bit M	AMM	18	17	AML	System Address Bit L
Logic Ground	GND	20	19	D15	System Data Bit 15
System Data Bit 14	D14	22	21	D13	System Data Bit 13
System Data Bit 12	D12	24	23	D11	System Data Bit 11
System Data Bit 10	D10	26	25	D9	System Data Bit 09
System Data Bit 08	D8	28	27	GND	Logic Ground
Keyboard Data Geneve	KBDAT	30	29	KBCLK	Keyboard Clock Geneve
Turbo Switch	TURBO/SW32	32	31	RESETSW	Reset Switch
Minus 5 Volts Reg.	-5V	34	33	-5V	Minus 5 Volts Reg.
Plus 12 Volts Reg.	+12V	36	35	+12V	Plus 12 Volts Reg.

THREE-MONTH LIMITED WARRANTY

This RAVE 99 PROFESSIONAL EXPANSION CHASSIS Warranty Extends To The Original Consumer Purchaser of the Accessory.

WARRANTY DURATION

This PROFESSIONAL EXPANSION CHASSIS is Warranted for a period of three(3) months from the date of the original purchase by the consumer.

WARRANTY COVERAGE

This PROFESSIONAL EXPANSION CHASSIS is Warranted against defective materials or workmanship. THIS WARRANTY IS VOID IF THE ACCESSORY HAS BEEN DAMAGED BY ACCIDENT, UNREASONABLE USE, NEGLIGENCE, IMPROPER SERVICE OR OTHER CAUSES NOT ARISING OUT OF DEFECTS IN MATERIALS OR WORKMANSHIP.

WARRANTY DISCLAIMERS

ANY IMPLIED WARRANTIES ARISING OUT OF THIS SALE, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO THE ABOVE THREE-MONTH PERIOD. RAVE 99 SHALL NOT BE LIABLE FOR LOSS OF USE OF THE HARDWARE OR OTHER INCIDENTAL OR CONSEQUENTIAL COSTS, EXPENSES, OR DAMAGES INCURRED BY THE CONSUMER OR ANY OTHER USER. Some states do not allow the exclusion or limitation of implied warranties or consequential damages, so the limitations or exclusions may not apply to you in these states.

LEGAL REMEDIES

This warranty gives you specific legal rights, and you may have other rights that vary from state to state.

WARRANTY PERFORMANCE

During the above three month period, your PROFESSIONAL EXPANSION CHASSIS will be repaired or replaced with a new or reconditioned unit of the same or equivalent model(at RAVE 99's option) when the unit is returned by prepaid shipment to RAVE 99 at the address below. The repaired or replacement unit will be warranted for three months from the date of repair or replacement. Other than the postage requirement, no charge will made for repair or replacement of in-warranty units.

RAVE 99 strongly recommends that you insure the unit for value prior to shipping.

SHIP TO : RAVE 99 CO.
112 RAMBLING ROAD
VERNON, CT. 06066

WARRANTY REGISTRATION

THE INFORMATION BELOW SHOULD BE COMPLETED AND RETURNED TO RAVE 99 IN ORDER TO SPEED REPAIR OF YOUR UNIT IF IT EVER SHOULD NEED WARRANTY SERVICE. PLEASE ALSO INDICATE IF YOU DESIRE TO HAVE YOUR NAME ADDED TO THE RAVE 99 MAIL LIST IN ORDER TO BE INFORMED OF NEW PRODUCTS AND SPECIAL OFFERS.

**** NOTE **** IN THE EVENT YOUR IN-WARRANTY UNIT REQUIRES SERVICE, PROOF OF PURCHASE MAY BE REQUIRED. DATED SALES SLIP, RECEIPT, OR INVOICE IS SATISFACTORY PROOF OF PURCHASE.

NAME

ADDRESS

CITY

STATE

ZIP

AA

RAVE 99 PRODUCT

SERIAL NUMBER

DATE OF PURCHASE

PURCHASED FROM

TYPE OF SYSTEM PRODUCT WILL BE USED WITH (99/4A,9640,ETC.)

I DO ___ / DO NOT ___ WISH TO BE ADDED TO THE RAVE 99 MAIL LIST.
(PLEASE CHECK ONE)

MAIL TO: RAVE 99
112 RAMBLING RD
VERNON, CT. 06066
ATTN: WARRANTY