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CPV5350 CompactPCI® Single Board Computer and Transition Module Installation and Reference Guide

CPV5350A/IH1

March 10, 2000

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Preface

This CPV5350 Single Board Computer and Transition Module Installation Guide describes the installation, components and configurations of the CPV5350 Single Board Computer and CPV5350TM80 Transition Module. Use this guide for general and technical information about the CPV5350 CompactPCI System CPU.

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Safety Summary

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 Motorola is 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 earth ground. If the equipment is supplied with a three-conductor AC power cable, the power cable must be plugged into an approved three-contact electrical outlet, with the grounding wire (green/yellow) reliably connected to an electrical ground (safety ground) at the power outlet. The power jack and mating plug of the power cable must meet International Electrotechnical Commission (IEC) safety standards and local electrical regulatory codes.

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.

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 your local Motorola representative 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.

Flammability

All Motorola printed wiring boards (PWB) are manufactured by UL-recognized manufacturers, with a flammability rating of 94V-0.

Electromagnetic Interference Caution



CAUTION

This equipment generates, uses, and can radiate electromagnetic energy. It may cause or be susceptible to electromagnetic interference (EMI) if not installed and used in a cabinet with adequate EMI protection.

CE Notice (European Community)



WARNING

This is a Class A product. In a domestic environment, this product may cause interference, in which case the user may be required to take adequate measures.

Motorola Computer Group products with the CE marking comply with the EMC Directive (89/336/EEC). Compliance with this directive implies conformity with the following European Norms:

> EN55022 “Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment”. Tested to Equipment Class B.
>
> EN50082-1:1997 “Electromagnetic Compatibility -- Generic Immunity Standard, Part 1. Residential, Commercial and Light Industry”.

System products also fulfill EN60950 (product safety) which is essentially the requirement for the Low Voltage Directive (73/23/EEC).

Board products are tested in a representative system to show compliance with the above mentioned requirements. A proper installation in a CE-marked system will maintain the required EMC/safety performance.

In accordance with European Community directives, a “Declaration of Conformity” has been made and is on file within the European Union. The “Declaration of Conformity” is available on request. Please contact your sales representative.

Lithium Battery Caution

This product contains lithium batteries to power clock and calendar circuitry.



CAUTION

Danger of explosion if battery is incorrectly replaced.Replace only with the same or equivalent type recommended by the equipment manufacturer.

Dispose of used batteries according to the manufacturer's instructions.



Attention

Il y a danger d'explosion s'il y a remplacement incorrect de la batterie.

Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé par le constructeur. Mettre au rebut les batteries usagées conformément aux instructions du fabricant.



Vorsicht

Explosionsgefahr bei unsachgemäBem Austausch der Batterie.

Ersatz nur durch denselben oder einen vom Hersteller empfohlenen gleichwertigen Typ. Entsorgung gebrauchter Batterien nach Angaben des Herstellers.

Summary of Changes

Date:	Change:
March 10, 2000	added “Compact FLASH Memory Card Installation” information to Chapter 4
	revised front matter
	added J51 description to Table 3-1
	added CFM airflow specification to Table 1-5
	revised environmental specifications in Table 1-5
	input power specifications in Table 1-2
	added information about Transition Modules to “Additional Features”, on page 1-1
	added Appendix B, “Related Documentation”

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CPV5350 Single Board Computer and Transition Module Overview

1

Introduction

The CPV5350 Single Board Computer (SBC) is a hot swap, CompactPCI (Compact Peripheral Communication Interface) compliant computer with high availability platform support. It is powered by a PICMG (PCI Industrial Computer Manufacturers Group) compatible Pentium® II Deschutes Mobile Module. The CPV5350's 6U (160mm x 233mm x 61mm), 4HP (.8 inch) CompactPCI standard form factor is designed for installation into PICMG CompactPCI compliant backplanes.

The integrated processor provides standard PC I/O plus USB, PCI EIDE, 3D AGP graphics and dual fast Ethernet controllers with optional on-board Compact Flash™ connector for solid-state disk expansion.

Optional Transition Modules give you backplane I/O through the J3 and J5 connectors on the CPV5350.

The CPV5350 meets the needs of embedded application developers addressing high-bandwidth industrial control and telephony applications. Typical applications include broadband data or intelligent network switching, CTI server, industrial control and automation, military and aerospace, and medical, scientific, or imaging products.

Additional Features

The CPV5350 gives you these features:

- Pentium® II processor Mobile Module for high end embedded applications
- One 168-pin DIMM site for on-board memory expansion
- Accelerated 3D AGP graphics with 8MB of video memory
- Dual Ethernet controllers provide redundant ports for telecom applications

- Hot-Swap compatibility allows non-system slot boards to be removed or added while the chassis is powered up
- An array of on-board I/O that is available from the front panel of the CPV5350 and/or the rear panel via the CPV5350TM80 transition board

The external, standard Transition Module (CPV5350TM80 - EXT) gives you these features:

- Rear panel connections for:
  - dual ethernet (two, RJ-45)
  - video (one, 15-pin D-sub)
  - serial ports (two, RS-232 9-pin D-sub)
  - parallel port (one, 25-pin D-sub)
  - keyboard/mouse (one, 6-pin mini-DIN)
- On-board connectors for:
  - a speaker
  - reset
  - EIDE (supports up to 4 devices)
  - floppy (34-pin)
  - USB (two, 4-pin)
  - keyboard/mouse (12-pin)

Transition Module CPV5350TM80 - INT is for internal chassis use only. It has no connectors on the back panel. Other Transition Modules available are:

- CPV5350TM80-F - CPV5350 80mm Transition Module
- CPV5350TM80AI-F - CPV5350 TM with Alarm Interconnect
- CPV5350TM80S-F - CPV5350 TM with Alarm and SCSI

Input/Output Interfaces

Refer to Table 1-1 for brief descriptions of the input/output interfaces on the CPV5350 Single Board Computer and CPV5350TM80 Transition Module. Do not use the rear panel connectors and internal connectors at the same time.

Note When the identical function is available through the CPV5350's front panel and the rear transition module, you can use either the front or the rear, **not both**.

Table 1-1. Input/Output Interfaces on the CPV5350 Single Board Computer and the CPV5350T Transition Module

Function	CPV5350		CPV5350 Transition Module (external)	
	Front Panel	On-board	Rear Panel	On-board
Ethernet	two, RJ-45 connectors	none	two - RJ-45 connectors	none
I^2C and External Alarm Connector	none	none	none	10-pin shrouded connector
Video	15-pin high sensitivity D-sub	none	15-pin high density D-sub	none
Keyboard/Mouse	6-pin PS/2 female connector	none	6-pin PS/2 female connectors	12-pin connector
COM 1 (serial port 1)	9-pin D-sub	none	9-pin D-sub	none
COM 2 (serial port 2)	9-pin D-sub	none	9-pin D-sub	none
USB 1 and USB 2	one, 4-pin connectors	none	none	two - stacked 4-pin connectors

Table 1-1. Input/Output Interfaces on the CPV5350 Single Board Computer and the CPV5350T Transition Module (Continued)

Function	CPV5350		CPV5350 Transition Module (external)	
	Front Panel	On-board	Rear Panel	On-board
EIDE interface	none	sandisk compact flash	none	none
	none	none	none	40-pin shrouded connector (secondary)
Floppy interface	none	none	none	34-pin shrouded connector
Parallel Port	none	none	25-pin D-sub	none

[1] Do not use the internal and rear panel connectors at the same time.

Refer to Figure 1-1 for a block diagram of the CPV5350 SBC.

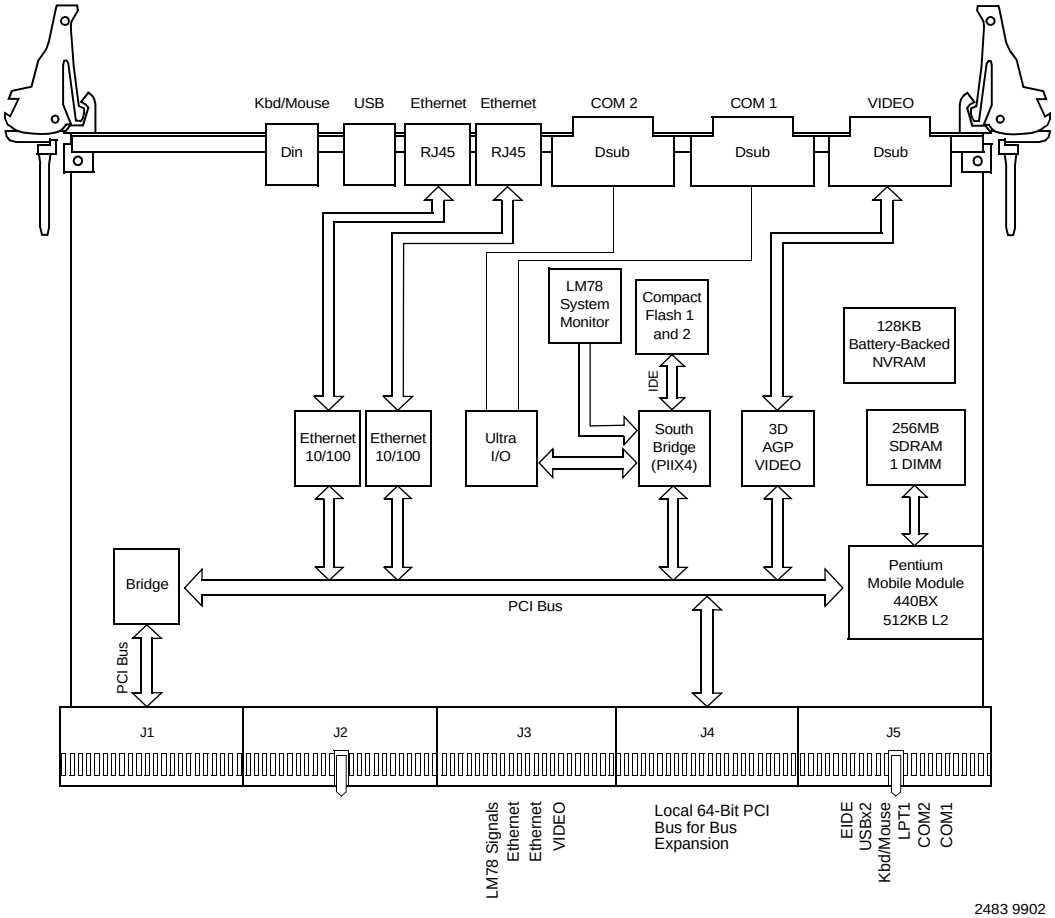


Figure 1-1. Block Diagram of the CPV5350 Single Board Computer

Special Functions

The CPV5350 uses these functions designed for use in certain applications. Refer to the "CPV5350 CompactPCI BIOS and Programmer's Reference Guide" (part number CPV5350A/PGx) for more information.

- Watchdog Timer

  The watchdog timer can operate in four modes:

  - Disabled
  - Set a flag in a register in ISA I/O memory map
  - Set a flag in a register in ISA I/O memory map + Assert a selectable interrupt (ISA, NMI, SMI, SCI)
  - Set a flag in a register in ISA I/O memory map + Assert NMI followed by a system reset

  You can program the watchdog timer via registers in the ISA I/O memory map. The watchdog timer is protected from being accidentally enabled. The timer supports a range of count down time-outs from 17.8ms to 4.86 minutes.

- Advanced System Monitoring

  The CPV5350 monitors the following system events:

  - On-card temperature
  - Enclosure fan under speed
  - MMC2 thermal fault
  - On-card voltages +5V, +3.3V, +/-12V and the processor core voltage
  - System Management Bus (SMBUS) alert signal
  - Chassis power supply loss of regulation
  - Chassis intrusion

Fault status information is available to the system through a register mapped in the ISA I/O space. You can also select events to generate System Management Input (SMI), Non-Maskable Interrupt (NMI), Interrupt Request (IRQ) or System Management Bus Alert (SMBUS) interrupt signals and an external alarm signal.

Specifications

Refer to these tables for:

- input power requirements (Table 1-2)
- physical characteristics (Table 1-3)
- lithium battery specifications (Table 1-4)
- environmental specifications (Table 1-5)

Table 1-2. Power Requirements for the CPV5350 Single Board Computer

Input power	Clock speed
+5V @ 3A	266MHz w/64 or 128MB SDRAM
+12V @ 100mA	333MHz w/64 or 128MB SDRAM
-12V @ 1mA	
+3.3V @ 3A	

Table 1-3. Physical Characteristics of the CPV5350 Single Board Computer

Parameter	Description
Form Factor	CompactPCI Standard 6U Conforms to PICMG Compact PCI 2.1 and PCI SIG 2.1 specifications
Dimensions	4 HP (.8 inches) wide, 6U (233mm x 160mm x 61mm)

Table 1-4. Lithium Battery Specifications

Rating	Shelf Life
1000mA/hour	10 years

Table 1-5. Environmental Specifications

Parameter	Condition	Specification
Temperature	Operating	0°C to 50°C (32°F to 122°F)[1]
	Non-operating	-40°C to 65°C (°-40F to 150°F)
Humidity	Operating	5% to 90% @ 40°C, non-condensing
	Non-operating	5% to 95% @40°C, non-condensing
Shock	Operating	10G, 3 axis
	Non-operating	per ASTM 0775
Vibration	Operating	1.0 G RMS, 3 axis
	Non-operating	6 Gs RMS, 3 axis
Altitude	Operating	15,000 feet (4,572 m)
	Non-operating	40,000 feet (12,192 m)
Maximum wet bulb	Operating	28°C (82°F)
	Non-operating	32°C (90°F)
Cooling	na	35 CFM over the Single Board Computer
MTBF (MIL-HDBK-217F)	Mean	190,509 hours
	95% Confidence	107,681 hours
[1] Derate the maximum operating temperature by 1°F (1.8°C) per 3280 feet (1000m) above sea level.		

Getting Started 2

This chapter gives you basic installation information.

Note This document treats the CPV5350 as a component of a system, and assumes installation into a PICMG CompactPCI compliant CompactPCI backplane.

Antistatic Precautions



Caution

Take care when handling the CPV5350. The CPV5350 and its active components are sensitive to electrostatic discharge (ESD), and can easily be damaged. Motorola recommends that you use an antistatic wrist strap when handling the CPV5350 and associated components. Also, follow these rules:

- Do not allow any circuit board or component to touch non-conductors.
- Make sure that your clothing does not make contact with any circuit board or component.
- Keep any loose circuit boards inside or on top of their conductive plastic wrappers.
- Before you touch a loose circuit board or component, discharge any static electricity.

2

Before Installing the CPV5350

After removing the CPV5350 from its packaging:

- ❏ Check for obvious physical damage.
- ❏ Verify that the coin cell battery is in its holder and inserted correctly.
- ❏ Verify that the CPU fan is connected.
- ❏ Install main memory DIMMs. Refer to Chapter 4, “Installing Options” for information about the DIMMs and their installation.

Warning

Make sure that you disconnect the chassis from the main power supply before you continue.

Installing the CPV5350

Use these steps to install the CPV5350 into your computer chassis. Refer to Figure 2-1.

1. Follow the instructions in your chassis user manual to remove any outer cover.
2. Locate the “system slot” (normally slot one - the far right slot when viewed from the front).
3. Remove any filler panel (or existing CPU board) that might fill that slot.
4. Install the top and bottom edge of the CPV5350 in the guides of the chassis.
5. Ensure that the levers of the two injector/ejectors are in the inward position.
6. Slide the CPV5350 into the chassis until resistance is felt.

7. Simultaneously move the injector/ejector levers in an outward direction.
8. Verify that the CPV5350 is properly seated and secure it to the chassis using the two screws located adjacent to the injector/ ejector levers.
9. Connect the appropriate cables to the CPV5350.

10. Repeat steps 3 through 8 for installing the transition module.

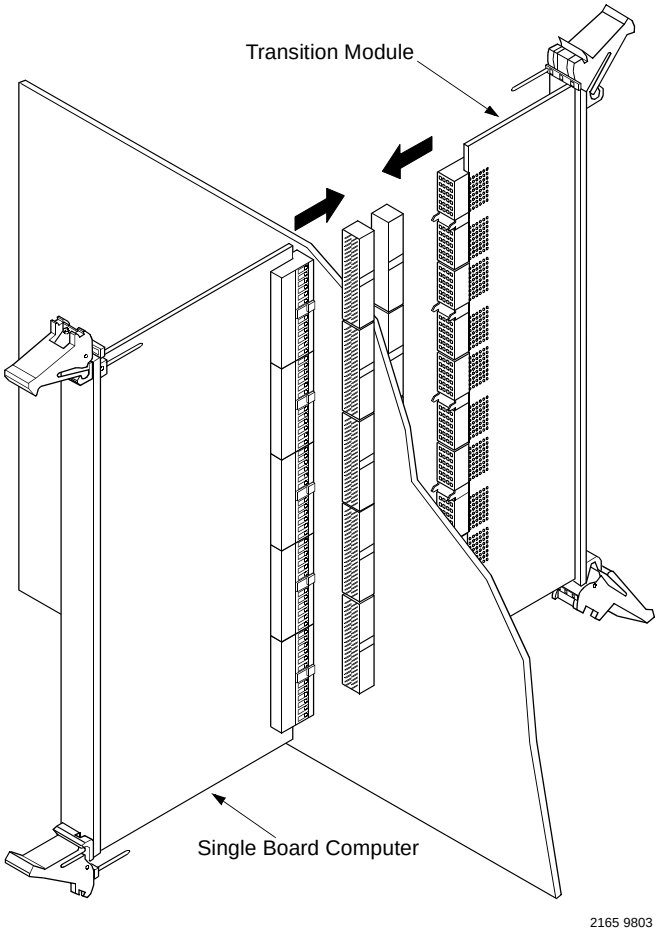


Figure 2-1. Installing the CPV5350 Single Board Computer in Your Computer Chassis

Powering up the CPV5350

When you are ready to power up the CPV5350:

- Verify that the chassis power supply voltage setting matches the voltage present in the country of use (if the power supply in your system is not auto-sensing).
- On powering up, the CPV5350 displays the PhoenixBIOS banner and then runs a memory test.

Replacing the On-board Lithium Battery



Caution

Do not service or replace the lithium battery in the field. Contact your Motorola service representative to arrange for service or battery replacement.

If you must replace the lithium battery use the following guidelines.

Note When replacing the battery, you must apply power to the board to prevent data loss.



Warning

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

Warning

Lithium batteries incorporate flammable materials such as lithium and organic solvents. If lithium batteries are mistreated or handled incorrectly, they may burst open and ignite. This can result in injury and/or fire. When dealing with lithium batteries, carefully follow the precautions listed below to prevent accidents.

- Do not short-circuit.
- Do not disassemble, deform or apply excessive pressure.
- Do not heat or incinerate.
- Do not apply solder directly.
- Do not use different models, or new and old batteries together.
- Do not charge.
- Always check proper polarity.

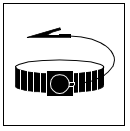
To replace the on-board backup battery, follow the steps below.

Caution

Danger of explosion if battery is incorrectly replaced.

Replace only with the same or equivalent type recommended by the equipment manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Use ESD



Wrist Strap

1. Attach an ESD strap to your wrist. Attach the other end of the ESD strap to the chassis as a ground. Secure the ESD strap to you wrist and to ground throughout the procedure.
2. To remove the battery from the module, carefully pull the battery from the socket.

Caution Avoid touching areas of integrated circuitry. Static discharge can damage circuits.

3. Before installing a new battery, make sure the battery pins are clean.
4. Note the battery polarity and press the new battery into the socket.

Note No soldering is required when the battery is in the socket.

2

Front Panel Connectors on the CPV5350

The CPV5350's front panel has connectors for:

- keyboard/mouse
- video
- COM1 and COM2 (serial ports)
- Ethernet 1 and Ethernet 2
- USB1 and USB2

LED Indicator lights on the front panel display of the CPV5350 include:

- watchdog alarm
- speaker status
- hard disk drive activity
- power

Refer to Figure 2-2 for front panel connectors and LEDs on the CPV5350.

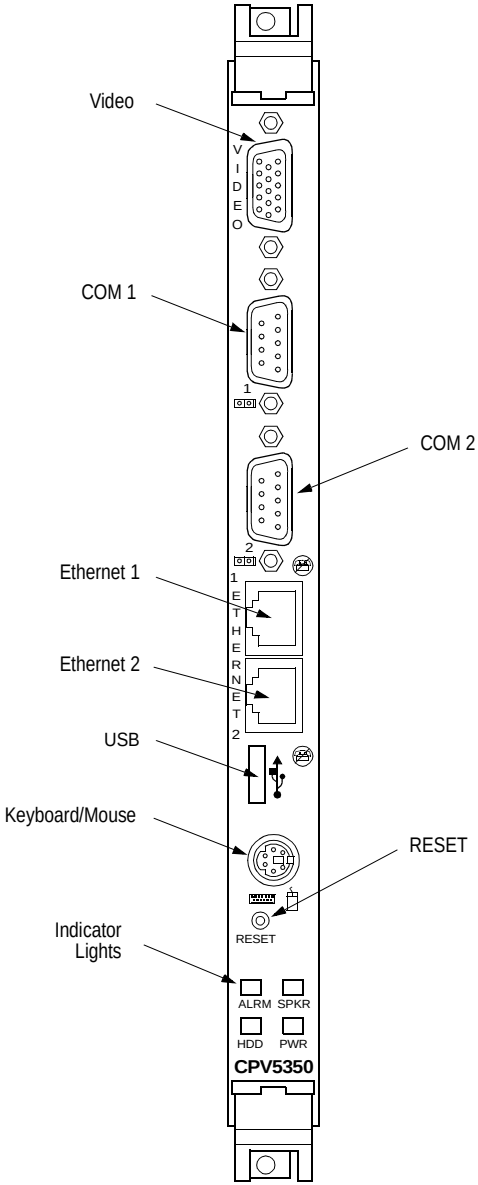


Figure 2-2. Front Panel Connectors and LEDs on the CPV5350 Single Board Computer

2

Rear Panel Connectors on the CPV5350 Transition Module

The CPV5350 Transition Module has connectors on the rear panel for:

- keyboard/mouse (PS/2)
- Ethernet 1 and Ethernet 2 (RJ45)
- COM1 and COM2 (serial ports) (9 pin D-sub)
- parallel printer (25 pin D-sub)
- video (15 pin high density D-sub)

Refer to Figure 2-3 for rear panel connectors on the CPV5350 Transition Module.

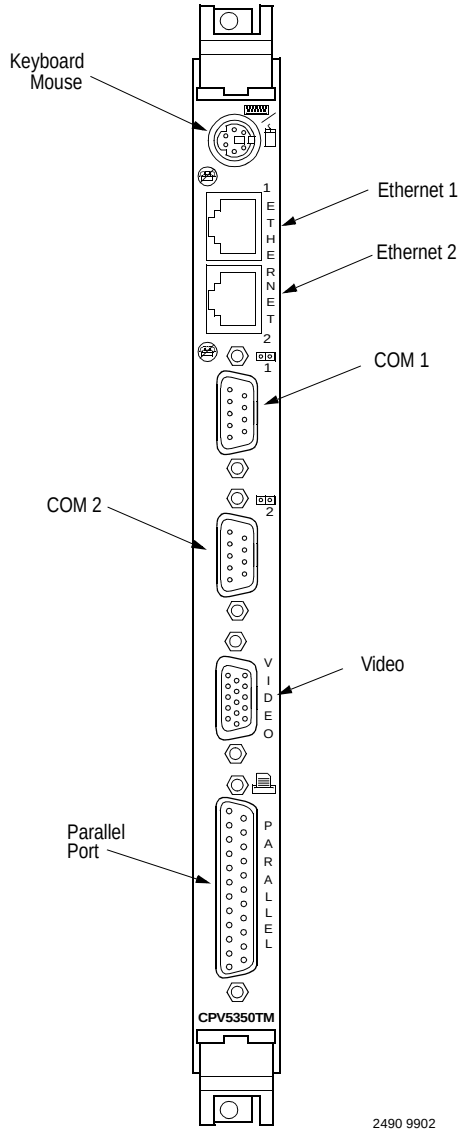


Figure 2-3. Rear Panel Connectors on the CPV5350 Transition Module

Components on the CPV5350 Single Board Computer

The CPV5350 Single Board Computer (SBC) carries components on both sides. Figure 3-1 shows the location of the jumpers and connectors.

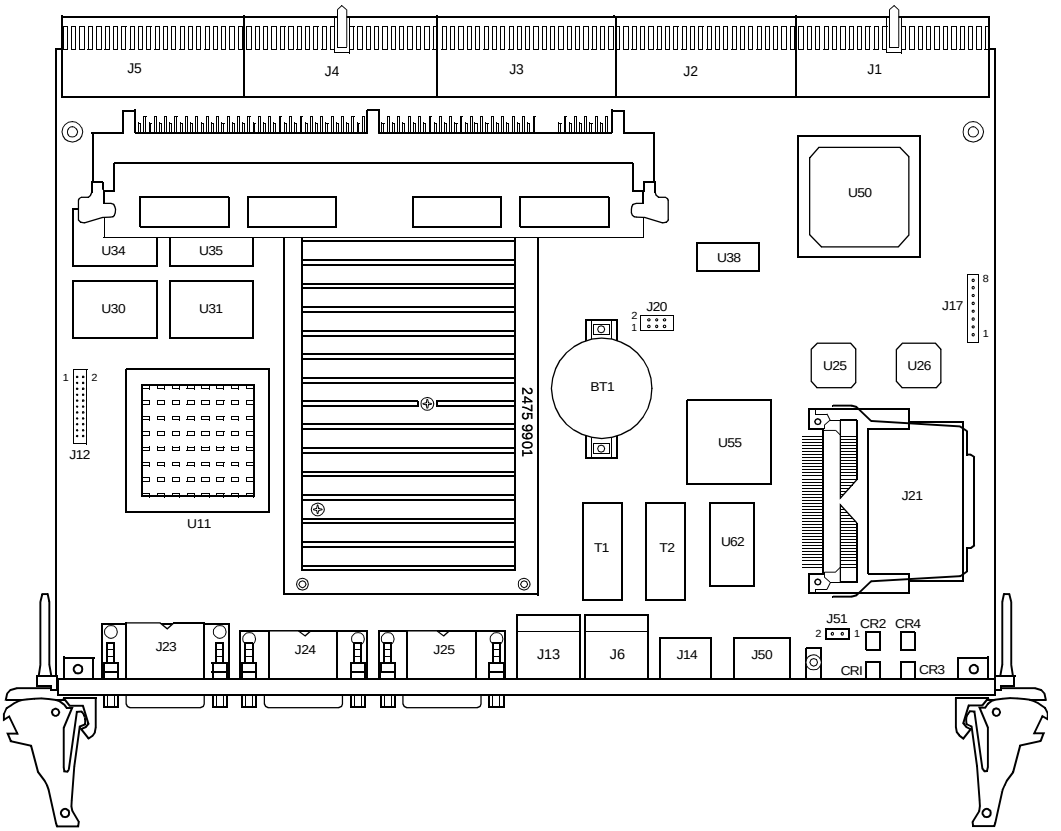


Figure 3-1. Location of Major Components on the CPV5350 Single Board Computer

Table 3-1 lists the connectors available to support devices on the CPV5350. Refer to Appendix A for connector pin assignments.

Table 3-1. List of Front Panel Connectors, Board Connectors and Components for the CPV5350 Single Board Computer

Figure 3-1 callout	Description
J1	CPCI backplane connector
J2	CPCI backplane connector
J3	CPCI backplane connector
J4	I/O Transition Module backplane connector
J5	I/O Transition Module backplane connector
J6	Ethernet 2
J9	EIDE
J10	Reserved (in-circuit programming)
J12	Reserved (in-circuit emulator)
J13	Ethernet 1
J14	USB port 1
J16	Reset (connected to pushbutton on the front panel)
J21	Flash ROM
J23	Video connector
J24	COM1 (Serial Port 1)
J25	COM2 (Serial Port 2)
J50	Keyboard/Mouse
J51	Reset switch jumper

Components for the CPV5350 Transition Module

Figure 3-2 shows major components on the CPV5350 Transition Module (TM) board.

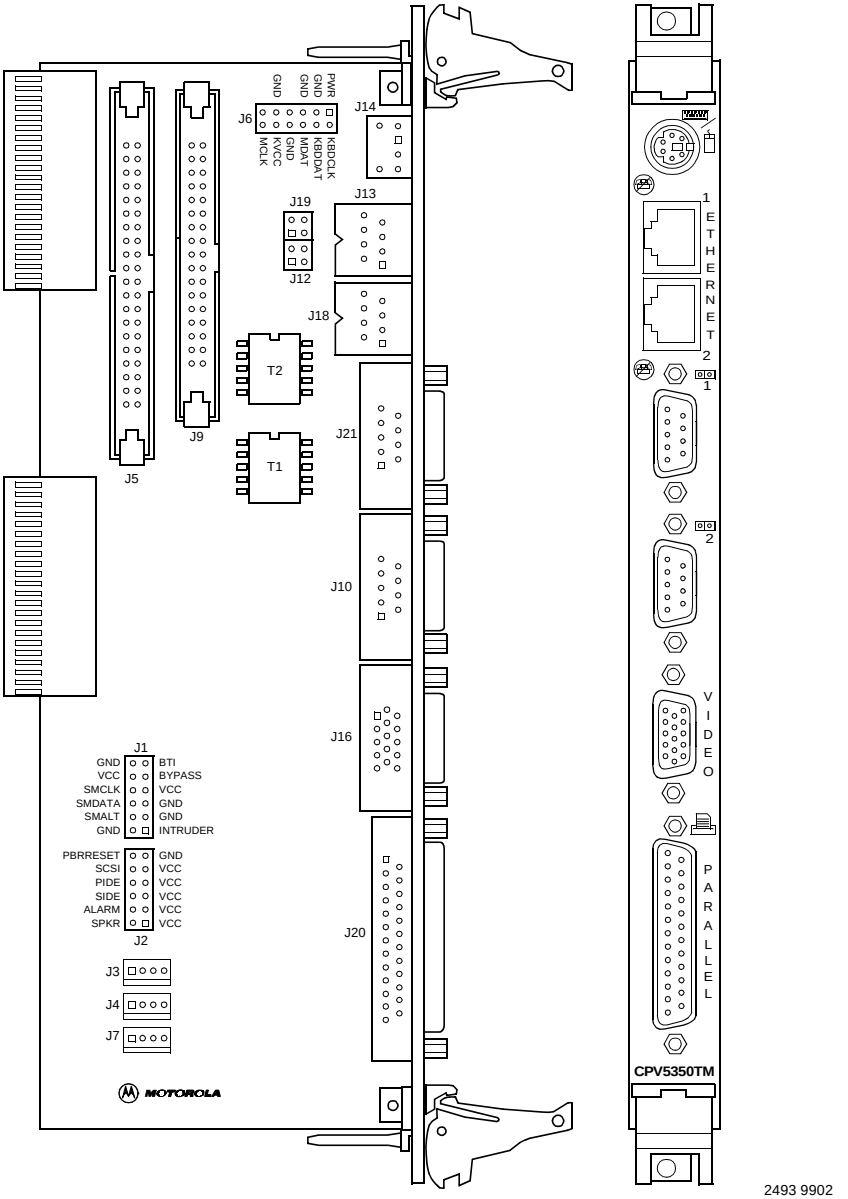


Figure 3-2. Location of Major Components on the CPV5350 TM

Table 3-2 lists components on the CPV5350 Transition Module

Table 3-2. List of Board Components for the CPV5350 Transition Module

Figure 3-2 callout	Description
J1	SM Bus and LM78 connector
J2	EIDE indicator lights, pushbutton reset, alarm indicator and speaker connector
J3	Fan tachometer connector
J4	Fan tachometer connector
J5	EIDE connector
J6	Keyboard/Mouse, power LED connector
J7	Miscellaneous Power
J9	Floppy connector
J12	USB port
J13	Ethernet 1
J14	Keyboard/Mouse
J16	Video Connector
J18	Ethernet 2
J19	USB port
J20	Parallel connector

Connecting to and Configuring Connectors

The CPV5350 provides several connectors for attaching peripheral devices. Before installing the CPV5350, you may want to connect your peripheral cables to the connectors. Refer to Appendix A for pin assignment information.

Note When the identical function is available through the CPV5350's front panel and rear transition module, you can use either the front or the rear, not both.

Please note the following cautions when connecting peripherals to the CPV5350.



Warning Always remove power from the system before connecting peripherals to the CPV5350. To reduce the risk of personal injury, disconnect the power cord from the power source. Only qualified, experienced electronics personnel should access the interior of a chassis.



Caution The components of the CPV5350 are sensitive to static discharge. While out of the unit, the CPV5350 should be placed on a static-dissipative surface or into a static-shielding bag.

CPU Speed Settings

The Mobile Module determines CPU speed. You cannot configure the speed settings.

Installing Options 4

System Memory Configurations

The CPV5350 has one 168-pin DIMM site for memory expansion.

The DIMM sites accept industry standard PC100 compliant DIMM modules (8, 16, 32, 64, 128 or 256Mb) with or without ECC. You can use either registered or unbuffered memory modules.

Installing DRAM DIMMS

To install a DIMM, locate the memory bank on the single board computer.

Before installing a DIMM, remove power from the system and disconnect all power cords. After power is removed. remove the CPV5350 from the chassis.



Caution

Only qualified, experienced electronics personnel should access the interior of a chassis. The components of the CPV5350 are sensitive to static discharge. Place components on a static-dissipative surface or into a static-shielding bag after removing them from the chassis.

Installing the CPV5350 DIMM

You do not need tools for this procedure.

1. Remove power from the chassis and disconnect all power cords.
2. Remove the CPV5350 from the chassis.
3. Locate the DIMM socket on the CPV5350. Refer to Figure 3-1.
4. Hold the DIMM so the keyed notches align with the tabs on the socket.
5. Insert the DIMM at a 45 degree angle. Refer to Figure 4-1.

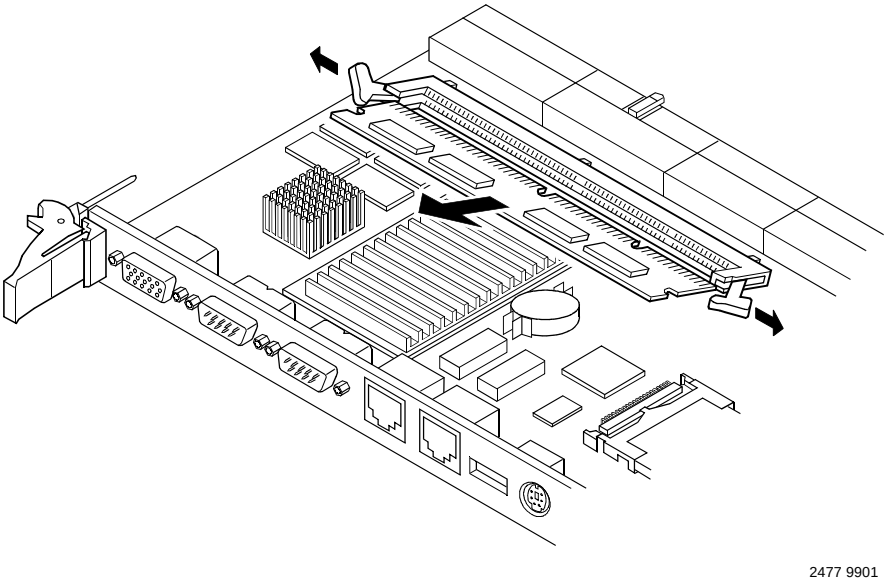


Figure 4-1. Inserting a DIMM into a CPV5350 DIMM Socket

6. Gently push the DIMM in until the ejector ears lock in place.
7. Install the CPV5350 in the chassis and connect the power cords.
8. Apply power to the chassis.

At bootup the BIOS automatically detects the new memory configuration.

Installing a Compact FLASH Memory Module

To mount the Compact FLASH memory module on the CPV5350 Single Board Computer (SBC) refer to these steps and Figure 4-2:

1. Attach an ESD strap to your wrist and to chassis ground throughout this procedure.
2. Shutdown the operating system.
3. Turn off power and remove the power lines from the system.
4. Remove the chassis or system cover(s) as necessary to access the compact PCI module.

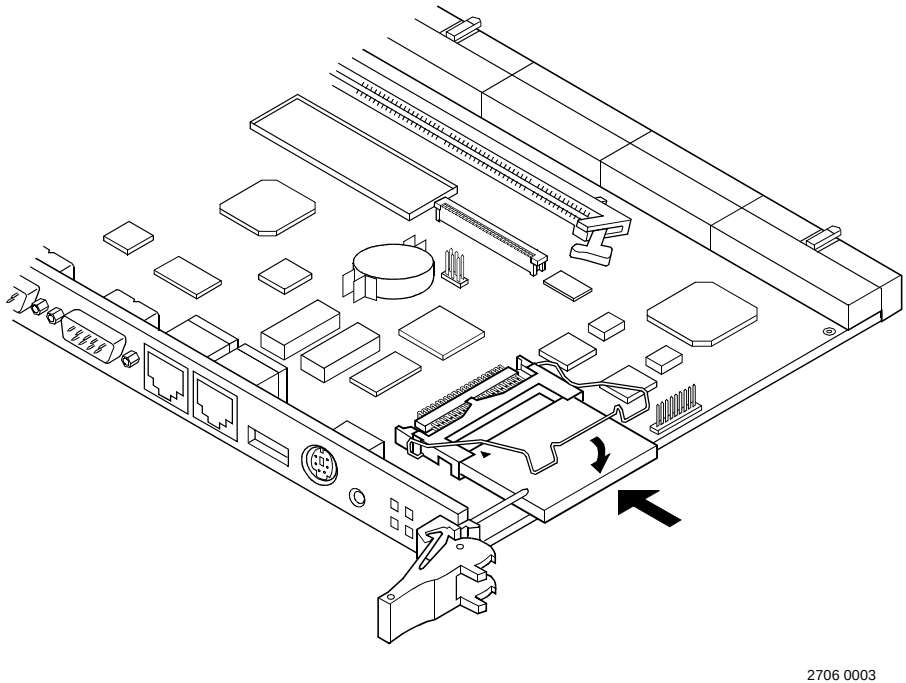


Figure 4-2. Compact FLASH Placement on the CPV5350 Single Board Computer



Caution

Inserting or removing modules with power applied may result in damage to module components.



Warning

To prevent injury, use extreme caution when handling, testing, and adjusting this equipment. Dangerous voltages capable of causing death exist.

5. Carefully remove the CompactPCI module from its slot and place it on a clean and protected working surface.



Caution

Avoid touching areas of integrated circuitry. Static discharge can damage these circuits.

6. Slide the Compact FLASH memory module into its connector (J21) and ensure that pin 1 of the module aligns with pin 1 of the connector
7. Snap on holding bracket to keep the memory module in place.
8. Reinstall the CPV5350 module in the proper system slot.
9. Ensure that the CPV5350 module properly seats in the backplane connectors.



Caution

Do not damage or bend connector pins.

10. Replace the chassis cover(s), reconnect the system to the power source, and turn the equipment power on.

Upgrading the CPU

You should not need to remove/replace your mobile module CPU. If your board needs service contact your field service representative.

Caution

Do not try to remove/replace the mobile module CPU. The EMC2 socket on the board is delicate and could be damaged during removal and replacement.

Installing Ethernet Controllers

The CPV5350 has two on-card Ethernet controllers called:

- Ethernet 1 (LAN 1)
- Ethernet 2 (LAN 2)

Depending on the method the operating system uses to detect on-card devices, Ethernet 1 may not correspond to the first Ethernet controller reported by the system.

Caution

If Ethernet connection is critical, we recommend installing and testing only one Ethernet connection at a time to determine the operating system to hardware binding for the LAN controllers.

Ethernet 1 settings in the BIOS always correspond to Ethernet controller 1 on the card regardless of what order the operating system reports the controllers.

Pin Assignments

A

Refer to Table A-1 to locate pin assignment information in this appendix.

Table A-1. Pin Assignment Locator Table

For information about pin assignments for the:	Go to:
- CPV5350 Single Board Computer (SBC) front panel connector - CPV5350 Transition Module (TM) rear panel connectors	Table A-2 on page A-2
- CPV5350 Transition Module connectors and jumpers	Table A-9 on page A-9
- CPV5350 Single Board Computer backplane connectors - CPV5350 Transition Module backplane connectors	Table A-17 on page A-20

Pin Assignments for CPV5350 SBC Front Panel and CPV5350 TM Rear Panel Connectors

This section gives you pin assignment information for CPV5350 Single Board Computer (SBC) front panel connectors and CPV5350 Transition Module (TM) rear panel connectors. Refer to Table A-2.

Table A-2. Front and Rear Panel Connectors on the CPV5350 Single Board Computer (SBC) and CPV5350 Transition Module (TM)

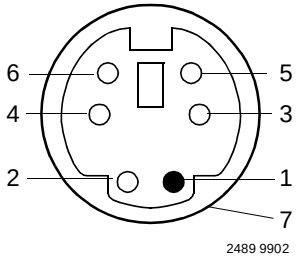
For:	with this type connector:	labeled:	Go to:
Keyboard/Mouse	6 pin PS/2 female	J50 (SBC) J14 (TM)	Table A-3
Ethernet 1	RJ45	J13 (SBC) J13 (TM)	Table A-4
Ethernet 2	RJ45	J6 (SBC) J18 (TM)	Table A-4
COM1 (serial port 1)	2 x 9 pin D-sub	J24 (SBC) J21 (TM)	Table A-5
COM2 (serial port 2)	2 x 9 pin D-sub	J25 (SBC) J10 (TM)	Table A-5
USB port 1, USB port 2	2 x 4 pin USB	J14 (SBC)	Table A-6
Video	15 pin high density D-sub	J23 (SBC) J16 (TM)	Table A-7
Parallel	25 pin D-sub	J20 (TM)	Table A-8

Keyboard/Mouse PS2 Connectors

Refer to Table A-3 for pin assignments for the CPV5350 SBC (J50) and CPV5350 TM (J14) keyboard and mouse connectors.

Table A-3. Keyboard/Mouse P/S2 Connector Pin Assignments for the CPV5350 Single Board Computer and CPV5350 Transition Module

Pin Number	Signal Mnemonic	Signal Description
1	KBDDAT	Keyboard Data
2	AUXDAT	Auxiliary Data
3	GND	Ground
4	KBDVCC	Keyboard Power (current limited to .75 Amp)
5	KBDCLK	Keyboard Clock
6	AUXCLK	Auxiliary Clock
7	CGND	Common Ground



Ethernet Connectors

Refer to Table A-4 for pin assignments for the:

- CPV5350 SBC
  - Ethernet 1 (J13)
  - Ethernet 2 (J6)
- CPV5350 TM
  - Ethernet 1 (J13)
  - Ethernet 2 (J18)

Table A-4. Ethernet Connector Pin Assignments for the CPV5350 Single Board Computer and CPV5350 Transition Module

Pin Number	Signal Mnemonic	Signal Description
1	TX+	Differential transmit lines
2	TX-	Differential transmit lines
3	RX+	Differential receive lines
4	--	--
5	--	--
6	RX-	Differential receive lines
7	--	--
8	--	--

Serial Port Connector

Refer to Table A-5 for pin assignments for the:

- CPV5350 SBC
  - COM 1 (Serial Port 1) (J24)
  - COM 2 (Serial Port 2) (J25)
- CPV5350 TM
  - COM 1 (Serial Port 1) (J21)
  - COM 2 (Serial Port 2) (J10)

Table A-5. Serial Port Connector Pin Assignments for the CPV5350 Single Board Computer and CPV5350 Transition Module

Pin Number	Signal Mnemonic	Signal Description
1	DCD-	data set has detected the data carrier
2	RX	Receives serial data input from communication link
3	TX	Sends serial output to communication link
4	DTR-	data set is ready to establish a communication link
5	GND	Ground
6	DSR-	data set is ready to establish a communication link
7	RTS-	indicates to data set that UART is ready to exchange data
8	CTS-	data set is ready to exchange data
9	RI-	modem has received a telephone ringing signal

Universal Serial Bus (USB) Connectors

Refer to Table A-6 for pin assignments for the CPV5350 SBC, Port 1 and Port 2 (J14)

Table A-6. USB Connector Pin Assignments for the CPV5350 Single Board Computer

Pin Number	Signal Mnemonic	Signal Description
1	+5V	Current limited USB power
2	DATA+	USB serial communication differential
3	DATA-	USB serial communication differential
4	GND	USB port common

Video Connector

Refer to Table A-7 for pin assignments for the:

- CPV5350 SBC, (J23)
- CPV5350 TM, (J16)

Table A-7. Video Connector Pin Assignments for the CPV5350 Single Board Computer and CPV5350 Transition Module

Pin Number	Signal Mnemonic	Signal Description
1	RED	Red signal
2	GREEN	Green signal
3	BLUE	Blue signal
4	NC	Not connected
5	DACVSS	Video return
6	DACVSS	Video return
7	DACVSS	Video return
8	DACVSS	Video return
9	NC	Not connected
10	DACVSS	Video return
11	NC	Not connected
12	DDCDAT	Display data channel data signal for DDC2 support
13	HSYNC	Horizontal synchronization
14	VSYNC	Vertical synchronization
15	DDCCLK	Display data channel clock signal for DDC2 support

Parallel Connector

Refer to Table A-8 for pin assignments for the CPV5350 TM parallel port.

Table A-8. Parallel Connector Pin Assignments for the CPV5350 Transition Module

Pin Number	Signal Mnemonic	Signal Description
1	STROBE-	Data at parallel port is valid
2	D0	Parallel data lines
3	D1	Parallel data line
4	D2	Parallel data line
5	D3	Parallel data line
6	D4	Parallel data line
7	D5	Parallel data line
8	D6	Parallel data line
9	D7	Parallel data line
10	ACK-	Acknowledge data retrieval
11	BUSY	Printer cannot accept more data
12	PE	Printer out of paper
13	SELECT	Set high when selected
14	AFD-	Causes printer to add a line feed
15	ERR-	Set low when an error is detected
16	INIT-	Initializes the printer
17	SLIN-	Selects the printer
18	GND	Ground
19	GND	Ground
20	GND	Ground
21	GND	Ground
22	GND	Ground
23	GND	Ground
24	GND	Ground
25	GND	Ground

Pin Assignments for CPV5350 Transition Module Connectors

Refer to Table A-9 for pinout information for CPV5350 Transition Module (TM) connectors.

Table A-9. On Board Connectorson the CPV5350 Transition Module

For Connector:	Type	Description	Go to:
J5	40 pin (2 x 20) shrouded header	EIDE, secondary	Table A-10
J9	34 pin (2 x 17) shrouded header	Floppy	Table A-11
J6	12 pin (2 x 6) header	Keyboard/Mouse/Power LED	Table A-12
J12 (Port 1) J19 (Port 2)	4 pin (2 x 2) headers	USB Port 1, USB Port 2	Table A-13
J1	12 pin (2 x 6) header	SM Bus and LM78	Table A-14
J3, J4	4 pin (2 x 2) mate-n-lock	Fan Tachometer/Power	Table A-15
J2	12 pin (2 x 6) header	EIDE Indicator Lights, Pushbutton Reset, Alarm Indicator, Speaker Connections	Table A-16

EIDE Headers

Refer to Table A-10 for EIDE header pin assignments for the CPV5350 Transition Module (TM), J5 header.

Table A-10. EIDE Header Pin Assignments for the CPV5350 Transition Module

Pin Number	Signal Mnemonic	Signal Description	Pin Number	Signal Mnemonic	Signal Description
1	Reset	reset signal to drive	2	GND	ground
3	DD7	drive data line	4	DD8	drive data line
5	DD6	drive data line	6	DD9	drive data line
7	DD5	drive data line	8	DD10	drive data line
9	DD4	drive data line	10	DD11	drive data line
11	DD3	drive data line	12	DD12	drive data line
13	DD2	drive data line	14	DD13	drive data line
15	DD1	drive data line	16	DD14	drive data line
17	DD0	drive data line	18	DD15	drive data line
19	GND	ground	20	-	-
21	DMARQ	drive DMA request	22	GND	ground
23	IOW	drive I/O write	24	GND	ground
25	IOR	drive I/O read	26	GND	ground
27	IORDY	drive is ready for I/O cycles	28	CSEL	cable select
29	DMACK	drive DMA acknowledge	30	GND	ground
31	INTRQ	drive interrupt request	32	IOCS16	16 bit register is decoded

Table A-10. EIDE Header Pin Assignments for the CPV5350 Transition Module (Continued)

Pin Number	Signal Mnemonic	Signal Description	Pin Number	Signal Mnemonic	Signal Description
33	DA1	drive register and data port address lines	34	PDIAG	output from drive 1 and monitored by drive 0
35	DA0	drive register and data port address lines	36	DA2	drive register and data port address lines
37	CS1	chip select drive 0, also command register block select	38	CS3	chip select drive 1, also command register block select
39	DASP	drive active slave present	40	GND	ground

Floppy Headers

Refer to Table A-11 for floppy header pin assignments and signal descriptions for the CPV5350 Transition Module (TM), J9 header.

Table A-11. Floppy Header Pin Assignments for the CPV5350 TM

Pin Number	Signal Mnemonic	Signal Description	Pin Number	Signal Mnemonic	Signal Description
1	GND	drive common	2	DRVDENS0	disk density select communication
3	-	-	4	-	-
5	GND	drive common	6	DRVDENS1	disk density select communication
7	GND	drive common	8	INDEX	beginning of a track
9	GND	drive common	10	MTR0	motor enable output
11	GND	drive common	12	DS1	drive select 1
13	GND	drive common	14	DS0	drive select 0
15	GND	drive common	16	MTR1	motor enable output
17	GND	drive common	18	DIR	controls direction of the floppy disk drive head during seek operation
19	GND	drive common	20	STEP	supplies step pulses to move head during seek operations
21	GND	drive common	22	WDATA	writes serial data to disk drive
23	GND	drive common	24	WGATE	enables head of disk drive to write to disk
25	GND	drive common	26	TR0	head of floppy disk drive is at track 0

Table A-11. Floppy Header Pin Assignments for the CPV5350 TM (Continued)

Pin Number	Signal Mnemonic	Signal Description	Pin Number	Signal Mnemonic	Signal Description
27	GND	drive common	28	WPROT	disk is write protected
29	GND	drive common	30	RDATA	raw read data from disk drive
31	GND	drive common	32	HDSEL	determines the side of the floppy disk being accessed
33	GND	drive common	34	DSKCHG	notifies disk drive controller that the drive door is open

Keyboard/Mouse/Power LED Header

Refer to Table A-12 for pin assignments and signal descriptions for the Keyboard/Mouse/Power LED header (J6) on the CPV5350 Transition Module.

Table A-12. Keyboard/Mouse/Power LED Header Pin Assignments for the CPV5350 Transition Module

Pin Number	Signal Mnemonic	Signal Description	Pin Number	Signal Mnemonic	Signal Description
1	PWRLED	Power LED Indicator	2	KBDCLK	Clock for keyboard
3	GND	Ground	4	KBDDAT	Data line for keyboard
5	GND	Ground	6	AUXDAT	Data line for mouse
7	-	-	8	GND	Ground
9	GND	Ground	10	KBDVCC	Keyboard power (.75A)
11	-	-	12	AUXCLK	Clock for mouse

USB Headers

Refer to Table A-13 for pin assignments and signal descriptions for the USB headers (J12 and J19) on the CPV5350 Transition Module

Table A-13. USB Header Pin Assignments for the CPV5350 Transition Module

Pin Number	Signal Mnemonic	Signal Description
1	+5V	Current limited USB power
2	DATA-	USB serial communications differential pair
3	DATA+	USB serial communications differential pair
4	GND	USB Port common

SM Bus and LM78 Header

Refer to Table A-14 for pin assignments and signal descriptions for the SM Bus and LM78 header (J1) on the CPV5350 Transition Module.

Table A-14. SM Bus and LM78 Header Pin Assignments for the CPV5350 Transition Module

Pin Number	Signal Mnemonic	Signal Description	Pin Number	Signal Mnemonic	Signal Description
1	OPEN-	Chassis intrusion signal	2	GND	Ground
3	GND	Ground	4	SMBALERT-	SM bus interrupt signal
5	GND	Ground	6	SMBDATA	SM bus data strobe signal
7	VCC	SM bus power	8	SMBCLK	SM bus clock signal
9	BYPASS	Power switch bypass signal	10	VCC	SM bus power
11	BT1-	Board temperature interrupt signal	12	GND	Ground

Fan Tachometer Headers

Refer to Table A-15 for pin assignments and signal descriptions for the Fan Tachometer headers (J3 and J4) on the CPV5350 Transition Module.

Table A-15. Fan Tachometer Header Pin Assignments for the CPV5350 Transition Module

Pin Number	Signal Mnemonic	Signal Description
1	VCC	SM bus power
2	TACH	Tachometer input for fan
3	GND	Ground
4	+12V	12 volt power

Indicator LED/Miscellaneous Header

Refer to Table A-16 for pin assignments and signal descriptions for the Indicator LED/Miscellaneous header (J2) on the CPV5350 Transition Module.

Table A-16. Indicator LED/Miscellaneous Header Pin Assignments for the CPV5350 Transition Module

Pin Number	Signal Mnemonic	Signal Description	Pin Number	Signal Mnemonic	Signal Description
1	VCC	+5V power (limited to .75A total)	2	SPEAKER	Speaker output
3	VCC	+5V power (limited to .75A total)	4	ALARM	Alarm indicator LED
5	VCC	+5V power (limited to .75A total)	6	EIDE_LEDa	Secondary channel EIDE activity LED
7	VCC	+5V power (limited to .75A total)	8	-	-
9	VCC	+5V power (limited to .75A total)	10	-	-
11	GND	Ground	12	PBRESET-	Push button reset

Pin Assignments for CPV5350 SBC and CPV5350 TM Backplane Connectors

This section gives you pinout information for:

- CPV5350 Single Board Computer backplane connectors (J5, J3, J4, J2, J1)
- CPV5350 Transition Module backplane connectors (J5, J3)

CPV5350 Single Board Computer, J5 Connector

Refer to Table A-17 for connector pin assignments and Table A-18 for signal descriptions for the CPV5350 Single Board Computer (SBC), J5 connector.

Table A-17. CPV5350 SBC Backplane Connector (J5) Pin Assignments

Pin Number	F	E	D	C	B	A	Z
22	GND	SPKR-	VCC	RESERVED	GND	RESERVED	GND
21	GND	MCLK	MDAT	VCC [1]	KBDCLK	KBDDAT	GND
20	GND	SMALART	GND(1)	SMBCLK	SMBDATA	RESERVED	GND
19	GND	UDATA0-	UDATA0+	VCC [1]	GND [1]	STB-	GND
18	GND	VCC [1]	GND [1]	UDATA1-	UDATA1+	AFD-	GND
17	GND	PD0	ERR-	PD1	INIT-	PD2	GND
16	GND	SLIN-	PD3	PD4	PD5	PD6	GND
15	GND	PD7	ACK-	BUSY	PE	SLCT	GND
14	GND	DTR(1)	GND	RI(1)	CTS1	RTS(1)	GND
13	GND	TXD(1)	DSR1	RXD(1)	VCC	DCD(1)	GND
12	GND	DTR(2)	VCC	RI(2)	CTS2	RTS(2)	GND
11	GND	TXD(2)	DSR(2)	RXD(2)	GND	DCD(2)	GND
10	GND	DSKCHG-	HDSEL-	RDATA-	WPROT-	TR0-	GND
9	GND	WGATE-	WDATA-	STEP-	DIR-	MTR1-	GND
8	GND	DS0	DS1-	MTR0-	INDEX-	RESERVED	GND
7	GND	RESERVED	RESERVED	DA1	CS3-	CS1-	GND
6	GND	DA2	DA0	RESERVED	GND	IOCS16-	GND
5	GND	DIOR-	DMACK-	DIOW	IORDY	DMARQ	GND
4	GND	INTRQ	DD15	GND	DD0	DD14	GND
3	GND	DD1	DD13	DD2	DD12	DD3	GND
2	GND	DD11	DD4	DD10	DD5	DD9	GND
1	GND	DD6	DD8	DD7	DRESET-	RESET-	GND

[1] These lines may be current limited and/or EMI filtered for direct cabling.

Table A-18. Signal Descriptions for the CPV5350 Single Board Computer (J5) Backplane Connector

Signal	Signal Mnemonic	Signal Description
Miscellaneous Signals	SPKR	PC/AT speaker output, open collector
	DIAG	diagnostic/alarm output, open collector
	PBRESET	pushbutton system reset input (pulled up, filtered, and debounced on host card
	RESET	system reset output, TTL totem-pole
Universal Serial Bus (USB) (0 & 1), USB levels	UDATAn+	(+) signal of differential data pair for USB channel
	UDATAn-	(-) signal of differential data pair for USB channel
SM Bus	SMALERT	SM bus interrupt signal
	SMBDATA	System Management Bus signals
	SMBCLK	SM bus clock signal
General	VCC	5 volt power supply
	GND	digital signal ground plane

Table A-18. Signal Descriptions for the CPV5350 Single Board Computer (J5) Backplane Connector (Continued)

Signal	Signal Mnemonic	Signal Description
EIDE (ATA-2), Secondary Channel, TTL levels	IOCS16	16 bit register is decoded
	DMARQ	drive DMA request
	DMACK	drive DMA acknowledge
	DIOR	drive I/O read
	DIOW	drive I/O write
	DASP	drive active/slave present
	IORDY	drive is ready for I/O cycle(s)
	DD [15:0}	drive data lines, bits 15 - 0
	DRESET	reset signal to drive
	CS1	chip select drive 0, also command register block select
	CS3	chip select drive 1, also command register block select
	DA {2:0]	drive register and data port address lines
	INTRQ	drive interrupt request
	PDIAG	output from drive 1 and monitored by drive 0
Parallel LPT Port, TTL levels	ACK-	pulsed by peripheral to acknowledge data sent
	BUSY	indicates printer cannot accept more data
	ERR-	peripheral detected an error
	PD[7:0]	parallel data lines, bits 7- 0
	PE	paper end - printer is out of paper
	AFD-	auto feed - causes printer to line feed
	INIT-	initializes printer
	SLIN-	select in, selects the printer
	STB-	data strobe, indicates data is valid
	SLCT	select, peripheral indicates it is selected

Table A-18. Signal Descriptions for the CPV5350 Single Board Computer (J5) Backplane Connector (Continued)

Signal	Signal Mnemonic	Signal Description
Serial COM Ports 1 and 2, RS-232 levels	CTS	clear to send
	DCD	data carrier detected
	DSR	data set ready
	DTR	data terminal ready
	RI	ring indicator
	RTS	request to send
	RXD	serial receive data
	TXD	serial transmit data
Floppy Disk Drive, TTL levels	DSKCHG-	indicates drive door is open
	DIR-	controls direction of the head during step operations
	DRVDENS [1:0]	disk density select communication
	DS[1:0]-	drive selects
	HDSEL-	selects top or bottom side head
	INDEX-	indicates the beginning of a track
	MTR[1:0]-	motor enables
	RDATA-	data read
	STEP-	step, pulses move head in or out
	TR0	indicates head is positioned above track 00
	WDATA-	write data to drive
	WGATE-	enables head write circuitry of drive
	WPROT-	indicates a disk is write-protected
Keyboard/ Mouse Device, TTL levels	MCLK	clock for PS/2 mouse
	MDAT	serial data line for PS/2 mouse
	KBDCLK	clock for PC/AT or PS/2 keyboard
	KBDDAT	serial data line for PC/AT or PS/2 keyboard

CPV5350 Single Board Computer, J3 Connector

Refer to Table A-19 for connector pin assignments and Table A-20 for signal descriptions for the CPV5350 Single Board Computer (SBC), J3 connector.

Table A-19. CPV5350 SBC Backplane Connector (J3) Pin Assignments

Pin Number	F	E	D	C	B	A	Z
19	GND	RSVD	RSVD	RSVD	RSVD	RSVD	GND
18	GND	RSVD	RSVD	RSVD	GND	HS_REQ	GND
17	GND	RSVD	RSVD	RSVD	GND	HS_GNT	GND
16	GND	RSVD	RSVD	RSVD	GND	HS_FLT	GND
15	GND	RSVD	RSVD	RSVD	GND	HS_EJ	GND
14	GND	RSVD	RSVD	RSVD	RSVD	RSVD	GND
13	GND	RSVD	RSVD	RSVD	RSVD	RSVD	GND
12	GND	RSVD	RSVD	RSVD	RSVD	RSVD	GND
11	GND	RSVD	RSVD	RSVD	RSVD	RSVD	GND
10	GND	RSVD	RSVD	RSVD	VCC	VCC	GND
9	GND	RSVD	RSVD	GND	GND	GND	GND
8	GND	VDDCCLK	VDDCDAT	V_BLU	V_GRN	V_RED	GND
7	GND	GND	V_VSYN	V_HSYN	GND	LANA ACT	GND
6	GND	GND	GND	LANA LI	LANA RD-	LANA RD+	GND
5	GND	LANA TD-	LANA TD+	LANB LI	GND	GND	GND
4	GND	LANBACT	GND	GND	LANB RD-	LANB RD+	GND
3	GND	GND	LANB TD-	LANB TD+	VCC	VCC	GND
2	GND	GND	GND	BT1-	PBYPASS	GND	GND
1	GND	FAN3	FAN2	INTRUDER-	SMBDATA	SMBCLK	GND

Table A-20. Signal Descriptions for the CPV5350 SBC (J3) Backplane Connector

Signal	Signal Mnemonic	Signal Description
General	VCC	5V power
	GND	ground plane
Video Signal Definitions	RED	red signal
	GRN	green signal
	BLU	blue signal
	HSYNC	horizontal synchronization
	VSYNC	vertical synchronization
	DDCCLK	display data channel clock signal for DDC2 support
	DDCDAT	display data channel data signal for DDC2 support
Ethernet	RD+, RD-	differential receive lines
	TD+, TD-	differential transmit lines
	LED1_2	transmit LED
	LED3	link LED
LM78 Signals	FAN3, FAN2	external fan tachometer inputs
	INTRUDER-	chassis intrusion signal
	BTI-	board temperature interrupt signal
	PBYPASS	power switch bypass signal
SM Bus Signals	SMBDATA	system management bus data strobe signal
	SMBCLK	system management bus clock signal

CPV5350 Single Board Computer, J4 Local PCI Connector

Refer to Table A-21 for connector pin assignments for local PCI connector J4. This connector routes the local 64 bit bus to the backplane for bus expansion.

Table A-21. CPV5350 Backplane Connector (J4) Pin Assignments

Pin Number	F	E	D	C	B	A	Z
25	GND	AD[32]	AD[33]	AD[34]	AD[35]	AD[36]	GND
24	GND	AD[37]	GND	AD[38]	AD[39]	AD[40]	GND
23	GND	AD[41]	AD[42]	AD[43]	AD[44]	AD[45]	GND
22	GND	AD[46]	AD[47]	AD[48]	CPU_+3.3	AD[49]	GND
21	GND	AD[50]	GND	AD[51]	AD[52]	AD[53]	GND
20	GND	AD[54]	AD[55]	AD[56]	CPU_+3.3	AD[57]	GND
19	GND	AD[58]	GND	AD[59]	AD[60]	AD[61]	GND
18	GND	AD[62]	AD[63]	PAR64	CPU_+3.3	C/BE[4]#	GND
17	GND	C/BE[5]#	GND	C/BE[6]#	C/B[7]#	REQ64#	GND
16	GND	ACK64#	AD[0]	AD[1]	CPU_+3.3	AD[2]	GND
15	GND	AD[3]	GND	AD[4]	AD[5]	AD[6]	GND
Key							
11	GND	AD[7]	GND	C/BE[0]#	AD[8]	AD[9]	GND
10	GND	AD[10]	AD[11]	AD[12]	CPU_+5	AD[13]	GND
9	GND	AD[14]	GND	AD[15]	C/BE[1]#	PAR	GND
8	GND	SERR#	PERR#	LOCK#	CPU_+5	STOP#	GND
7	GND	DEVSEL#	GND	TRDY#	IRDY#	FRAME#	GND
6	GND	C/BE[2]#	AD[16]	AD[17]	CPU_+5	AD[18]	GND
5	GND	AD[19]	GND	AD[20]	CLK	AD[21]	GND
4	GND	AD[22]	AD[23]	IDSEL	CPU_+5	C/BE[3]#	GND
3	GND	AD[24]	AD[25]	AD[26]	AD[27]	AD[28]	GND
2	GND	AD[29]	AD[30]	AD[31]	REQ#	GNT#	GND
1	GND	RST#	INTD#	INTC#	INTB#	INTA#	GND

CPV5350 Single Board Computer, J2 CompactPCI Bus Connector

Refer to Table A-22 for connector pin assignments for CPCI bus connector J2.

Table A-22. CPV5350 Backplane Connector (J2) Pin Assignments

Pin Number	F	E	D	C	B	A	Z
22	GND	GA0	GA1	GA2	GA3	GA4	GND
21	GND	RSV	RSV	RSV	GND	CLK6	GND
20	GND	RSV	GND	RSV	GND	CLK5	GND
19	GND	RSV	RSV	RSV	GND	GND	GND
18	GND	BRSVP2E18	GND	BRSVP2C18	BRSVP2B18	BRSVP2A18	GND
17	GND	GNT6#	REQ6#	PRST#	GND	BRSVP2A17	GND
16	GND	BRSVP2E16	GND	DEG#	BRSVP2B16	BRSVP2A16	GND
15	GND	GNT5#	REQ5#	FAL#	GND	BRSVP2A15	GND
14	GND	AD[32]	GND	AD[33]	AD[34]	AD[35]	GND
13	GND	AD[36]	AD[37]	VIO	GND	AD[38]	GND
12	GND	AD[39]	GND	AD[40]	AD[41]	AD[42]	GND
11	GND	AD[43]	AD[44]	VIO	GND	AD[45]	GND
10	GND	AD[46]	GND	AD[47]	AD[48]	AD[49]	GND
9	GND	AD[50]	AD[51]	VIO	GND	AD[52]	GND
8	GND	AD[53]	GND	AD[54]	AD[55]	AD[56]	GND
7	GND	AD[57]	AD[58]	VIO	GND	AD[59]	GND
6	GND	AD[60]	GND	AD[61]	AD[62]	AD[63]	GND
5	GND	PAR64	C/BE[4]#	VIO	GND	C/BE[5]#	GND
4	GND	C/BE[6]#	GND	C/BE[7]#	BRSVP2B4	VIO	GND
3	GND	GNT4#	REQ4#	GNT3#	GND	CLK4	GND
2	GND	REQ3#	GNT2#	SYSEN#	CLK3	CLK2	GND
1	GND	REQ2#	GNT1#	REQ1#	GND	CLK1	GND

CPV5350 Single Board Computer, J1 Compact PCI Bus Connector

Refer to Table A-23 for connector pin assignments for CPCI bus connector J1.

Table A-23. CPV5350 Backplane Connector (J1) Pin Assignments

Pin Number	F	E	D	C	B	A	Z
25	GND	VCC	VCC3	ENUM#	REQ64#	VCC	GND
24	GND	ACK64#	AD[0]	VIO	VCC	AD[1]	GND
23	GND	AD[2]	VCC	AD[3]	AD[4]	VCC3	GND
22	GND	AD[5]	AD[6]	VCC3	GND	AD[7]	GND
21	GND	C/BE[0]#	M66EN	AD[8]	AD[9]	VCC3	GND
20	GND	AD[10]	AD[11]	VIO	GND	AD[12]	GND
19	GND	AD[13]	GND	AD[14]	AD[15]	VCC3	GND
18	GND	C/BE[1]#	PAR	VCC3	GND	SERR#	GND
17	GND	PERR#	GND	SBO#	SDONE	VCC3	GND
16	GND	LOCK#	STOP#	VIO	GND	DEVSEL#	GND
15	GND	TRDY#	BD_SEL#	IRDY#	FRAME#	VCC3	GND
KEY							GND
11	GND	C/BE[2#]	GND	AD[16]	AD[17]	AD[18]	GND
10	GND	AD[19]	AD[20]	VCC3	GND	AD[21]	GND
9	GND	AD[22]	GND	AD[23]	IDSEL	C/BE[3]#	GND
8	GND	AD[24]	AD[25]	VIO	GND	AD[26]	GND
7	GND	AD[27]	GND	AD[28]	AD[29]	AD[30]	GND
6	GND	AD[31]	CLK	VCC3	GND	REQ#	GND
5	GND	GNT#	GND	RST#	BRSVP1B5	BRSVP1A5	GND
4	GND	INTS	INTP	VIO	HLTY	BRSVP1A4	GND
3	GND	INTD#	VCC	INTC#	INTB#	INTA#	GND
2	GND	TD1	TD0	TMS	VCC	TCK	GND
1	GND	VCC	+12V	TRST#	-12V	VCC	GND

CPV5350 Transition Module, J5 Connector

Refer to Table A-24 for connector pin assignments and Table A-25 for signal descriptions for the CPV5350 Transition Module (TM), J5 connector.

Table A-24. CPV5350 TM Backplane Connector (J5) Pin Assignments

Pin Number	F	E	D	C	B	A	Z
22	GND	SPKR-	VCC	DIAG-	GND	PBRESET	GND
21	GND	MCLK	MDAT	VCC [1]	KBDCLK	KBDDAT	GND
20	GND	SMBCLK	GND(1)	SMBALERT-	SMBDATA	VCC [1]	GND
19	GND	UDATA0-	UDATA0+	VCC [1]	GND [1]	STB-	GND
18	GND	VCC [1]	GND [1]	UDATA1-	UDATA1+	AFD-	GND
17	GND	PD0	ERR-	PD1	INIT-	PD2	GND
16	GND	SLIN-	PD3	PD4	PD5	PD6	GND
15	GND	PD7	ACK-	BUSY	PE	SLCT	GND
14	GND	DTR(1)	GND	RI(1)	CTS1	RTS(1)	GND
13	GND	TXD(1)	DSR1	RXD(1)	VCC	DCD(1)	GND
12	GND	DTR(2)	VCC	RI(2)	CTS2	RTS(2)	GND
11	GND	TXD(2)	DSR(2)	RXD(2)	GND	DCD(2)	GND
10	GND	DSKCHG-	HDSEL-	RDATA-	WPROT-	TR0-	GND
9	GND	WGATE-	WDATA-	STEP-	DIR-	MTR1-	GND
8	GND	DS0	DS1-	MTR0-	INDEX-	DRVDENS1	GND
7	GND	DRVDENS0	DASP	DA1	CS3-	CS1-	GND
6	GND	DA2	DA0	PDIAG-	GND	IOCS16-	GND
5	GND	DIOR-	DMACK-	DIOW	IORDY	DMARQ	GND
4	GND	INTRQ	DD15	GND	DD0	DD14	GND
3	GND	DD1	DD13	DD2	DD12	DD3	GND
2	GND	DD11	DD4	DD10	DD5	DD9	GND
1	GND	DD6	DD8	DD7	DRESET-	RESET-	GND

[1] These lines may be current limited and/or EMI filtered for direct cabling.

Table A-25. Signal Descriptions for the CPV5350 TM (J5) Backplane Connector

Signal	Signal Mnemonic	Signal Description
Miscellaneous Signals	SPKR	PC/AT speaker output, open collector
	DIAG	diagnostic/alarm output, open collector
	PBRESET	pushbutton system reset input (pulled up, filtered, and debounced on host card
	RESET	system reset output, TTL totem-pole
Universal Serial Bus (USB) (0 & 1), USB levels	UDATAn+	(+) signal of differential data pair for USB channel
	UDATAn-	(-) signal of differential data pair for USB channel
SM Bus	SMBALERT	SM bus interrupt signal
	SMBDATA	SM bus data strobe signal
	SMBCLK	SM bus clock signal
General	VCC	5 volt power supply
	GND	digital signal ground plane
EIDE (ATA-2), Secondary Channel, TTL levels	IOCS16	16 bit register is decoded
	DMARQ	drive DMA request
	DMACK	drive DMA acknowledge
	DIOR	drive I/O read
	DIOW	drive I/O write
	DASP	drive active/slave present
	IORDY	drive is ready for I/O cycle(s)
	DD [15:0}	drive data lines, bits 15 - 0
	DRESET	reset signal to drive
	CS1	chip select drive 0, also command register block select
	CS3	chip select drive 1, also command register block select
	DA {2:0]	drive register and data port address lines
	INTRQ	drive interrupt request
	PDIAG	output from drive 1 and monitored by drive 0

Table A-25. Signal Descriptions for the CPV5350 TM (J5) Backplane Connector (Continued)

Signal	Signal Mnemonic	Signal Description
Parallel LPT Port, TTL levels	ACK-	pulsed by peripheral to acknowledge data sent
	BUSY	indicates printer cannot accept more data
	ERR-	peripheral detected an error
	PD[7:0]	parallel data lines, bits 7- 0
	PE	paper end - printer is out of paper
	AFD-	auto feed - causes printer to line feed
	INIT-	initializes printer
	SLIN-	select in, selects the printer
	STB-	data strobe, indicates data is valid
	SLCT	select, peripheral indicates it is selected
Serial COM Ports 1 and 2, RS-232 levels	CTS	clear to send
	DCD	data carrier detected
	DSR	data set ready
	DTR	data terminal ready
	RI	ring indicator
	RTS	request to send
	RXD	serial receive data
	TXD	serial transmit data

Table A-25. Signal Descriptions for the CPV5350 TM (J5) Backplane Connector (Continued)

Signal	Signal Mnemonic	Signal Description
Floppy Disk Drive, TTL levels	DSKCHG-	indicates drive door is open
	DIR-	controls direction of the head during step operations
	DRVDENS [1:0]	disk density select communication
	DS[1:0]-	drive selects
	HDSEL-	selects top or bottom side head
	INDEX-	indicates the beginning of a track
	MTR[1:0]-	motor enables
	RDATA-	data read
	STEP-	step, pulses move head in or out
	TR0	indicates head is positioned above track 00
	WDATA-	write data to drive
	WGATE-	enables head write circuitry of drive
	WPROT-	indicates a disk is write-protected
Keyboard/ Mouse Device, TTL levels	MCLK	clock for PS/2 mouse
	MDAT	serial data line for PS/2 mouse
	KBDCLK	clock for PC/AT or PS/2 keyboard
	KBDDAT	serial data line for PC/AT or PS/2 keyboard

CPV5350 Transition Module, J3 Connector

Refer to Table A-26 for connector pin assignments and Table A-27 for signal descriptions for the CPV5350 Transition Module (TM), J3 connector.

Table A-26. CPV5350 TM Backplane Connector (J3) Pin Assignments

Pin Number	F	E	D	C	B	A	Z
19	GND	RSVD	RSVD	RSVD	RSVD	RSVD	GND
18	GND	RSVD	RSVD	RSVD	GND		GND
17	GND	RSVD	RSVD	RSVD	GND		GND
16	GND	RSVD	RSVD	RSVD	GND		GND
15	GND	RSVD	RSVD	RSVD	GND		GND
14	GND	RSVD	RSVD	RSVD	RSVD	RSVD	GND
13	GND	RSVD	RSVD	RSVD	RSVD	RSVD	GND
12	GND	RSVD	RSVD	RSVD	RSVD	RSVD	GND
11	GND	RSVD	RSVD	RSVD	RSVD	RSVD	GND
10	GND	RSVD	RSVD	RSVD	VCC	VCC	GND
9	GND	RSVD	RSVD	GND	GND	GND	GND
8	GND	DDCCLK	DDCDAT	BLUE	GREEN	RED	GND
7	GND	VCC	VSYNC	HSYNC	GND	LED1_2	GND
6	GND	GND	GND	LED3	RD-	RD+	GND
5	GND	TD-	TD+	LANB LED3	GND	GND	GND
4	GND	LANB LED1_2	GND	GND	LANB RD-	LANB RD+	GND
3	GND	GND	LANB TD-	LANB TD+	VCC	VCC	GND
2	GND	GND	GND	BT1-	PBYPASS		GND
1	GND	FAN3	FAN2	INTRUDER-			GND

Table A-27. Signal Descriptions for the CPV5350 TM (J3) Backplane Connector

Signal	Signal Mnemonic	Signal Description
General	VCC	5V power
	GND	ground plane
Video Signal Definitions	RED	red signal
	GREEN	green signal
	BLUE	blue signal
	DACVSS	video return
	HSYNC	horizontal synchronization
	VSYNC	vertical synchronization
	DDCCLK	display data channel clock signal for DDC2 support
	DDCDAT	display data channel data signal for DDC2 support
Ethernet	RD+, RD-	differential receive lines
	TD+, TD-	differential transmit lines
	LED1_2	transmit LED
	LED3	link LED
LM78 Signals	FAN3, FAN2	external fan tachometer inputs
	INTRUDER-	chassis intrusion signal
	BTI-	board temperature interrupt signal
	PBYPASS	power switch bypass signal

Related Documentation B

Motorola Computer Group Documents

The Motorola publications listed in Table B-1 are referenced in this manual. You can obtain paper or electronic copies of Motorola Computer Group publications by:

- Visiting Motorola Computer Group's World Wide Web literature site, http://www.motorola.com/computer/literature
- Contacting your local Motorola sales office

Table B-1. Motorola Computer Group Documents

Document Title	Motorola Publication Number
CPV5350 CompactPCI BIOS and Programmer's Reference Guide	CPV5350A/PGx

To obtain the most up-to-date product information in PDF or HTML format, visit http://www.motorola.com/computer/literature

URLs

The following URLs (uniform resource locators) may provide helpful sources of additional information about this product, related services, and development tools. Please note that, while these URLs have been verified, they are subject to change without notice.

- Motorola Computer Group, http://www.motorola.com/computer
- Motorola Computer Group OEM Services, http://www.motorola.com/computer/support

- PCI Industrial Computer Manufacturer's Group (PICMG) Hot Swap Specification, http://www.picmg.org
- Standard Microsystems Corporation, Ultra I/O Data Sheet, http://www.smsc.com/main/catalog/fdc37c67x.html
- Wired for Management, PXE (Preboot Execution Environment), http://developer.intel.com/ial/wfm

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