PCM-3920/3920V PC/104 VGA and Error Test Module

Introduction

The PCM-3920/3920V is specifically designed to work with Advantech's Biscuit PC and serves as an error test card (debug card) as well as VGA card. The PCM-3920/3920V also provide the flexibility of being able to attach PC/104 expansion modules.

Error Test Function

Whenever you start up the PCM-4820/4822/4824, the system runs a series of programs to test and initialize board hardware. During this process the PCM-3920/3920V will show the current status and error code (if any) on the 7-segment LED indicator. If an error does occur, you can reference the POST error code to the POST Test Code listing. In addition, the PCM-3920/3920V can also be used to test other PC/104 communication modules and I/O modules.

Super VGA Function (PCM-3920V only)

The PCM-3920V integrates a high-performance ALG2032 graphics accelerator. This graphics accelerator provides high resolution, PC compatible color display for CRT monitors.

With 1 full megabyte of display memory, the module supports 'Super VGA' high resolution graphics of up to 1024x768 pixels in 256 colors. Included with the PCM-3920V are drivers for popular software packages such as Windows 3.1, Windows 95, and so on.

Specifications

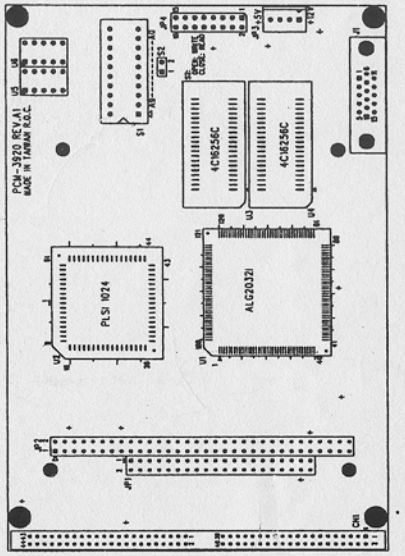
- **Dimensions:** 145 mm (L) x 102 mm (W)
- **Error Test Function:** I/O address of PCM-3920/3920V can be set from 0 to 3FF via the 10-position DIP switch
- **VGA Function:**

  Display Memory: 512 KB (Standard)
  1 MB (Optional)

  Resolution:

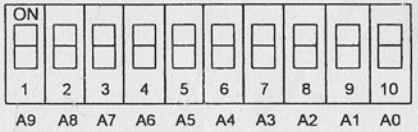
Resolution	Color	Vertical Refresh	Mode	Memory
1024 x 768	256	75	Non-interlaced	1 MB
800 x 600	256	75	Non-interlaced	1 MB
800 x 600	64k	60	Non-interlaced	1 MB
640 x 480	16.7M	60	Non-interlaced	1 MB
640 x 480	64k	75	Non-interlaced	1 MB
640 x 480	256	75	Non-interlaced	1 MB
640 x 480	256	75	Non-interlaced	512 kB
640 x 480	256	75	Non-interlaced	512 kB

Locating Components



I/O Address Setup

The PCM-3920/3920V is equipped with a 10-position DIP switch. The I/O address can be set anywhere from 0 to 3FF.



The I/O address is set as BCD code via the 10-position DIP switch

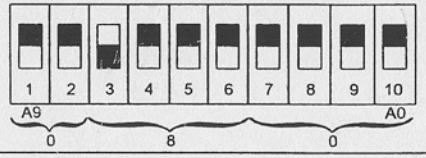
(1) A0=LSB

(2) A9=MSB

(3) I/O address range= 0~3FF (HEX)

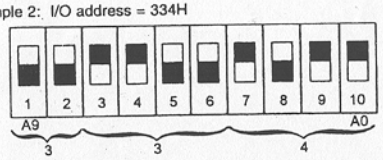
(4) Switch set ON is equal to 0

(5) Example 1: I/O address = 80H (default)



Part no. 2006920000 1st Edition Printed in Taiwan September 1996

Example 2: I/O address = 334H



I/O Port Read/Write Select (S2)

S2 may be set so as to display either read or write I/O information.

OPEN: 7-segment LED indicator shows the data which the Main Board writes to the I/O port.*

CLOSED: 7-segment LED indicator shows the data which the Main Board reads from the I/O port.

*Default Setting

Award BIOS POST test codes

Post Codes (Compressed Version)

POST (hex)	DESCRIPTION
C0	1. Turn off OEM specific cache, shadow... 2. Initialize all standard devices with default values. These devices include: -DMA controller (8237) -Programmable Interrupt Controller (8259) -Programmable Interval Timer (8254) -RTC chip
C1	Auto-detection of onboard DRAM and Cache
C3	1. Test system BIOS checksum 2. Test the first 256K DRAM 3. Expand the compressed codes into temporary DRAM area including the compressed system BIOS & Option ROMs
C5	Copy the BIOS from ROM into E0000-FFFFF shadow RAM to speed POST
01-02	Reserved
03	Initialize EISA registers (EISA BIOS only)
04	Reserved
05	1. Keyboard Controller Self-Test 2. Enable Keyboard Interface
06	Reserved
07	Verifies CMOS's basic R/W functionality
BE	Programs default values into chipset according to the MODBINable Chipset Default Table
09	1. Programs the configuration register of Cyrix CPU according to MODBINable Cyrix Register Table 2. OEM specific cache initialization (if needed)
0A	1. Initialize the first 32 interrupt vectors with corresponding interrupt handlers Initialize INT no. from 33-120 with Dummy (Spurious) Interrupt Handler 2. Issue CPUID instruction to identify CPU type 3. Early Power Management initialization (OEM specific)

Post Codes (For Boot Block)

POST (hex)	DESCRIPTION
C0	1. Turn off OEM specific cache, shadow... 2. Initialize all standard devices with default values. These devices include: -DMA controller (8237) -Programmable Interrupt Controller (8259) -Programmable Interval Timer (8254) -RTC chip
C1	Auto-detection of onboard DRAM and Cache
C3	Checking checksum of compressed code
C5	Copy the BIOS from ROM into E0000-FFFFF shadow RAM to speed POST
04	Clear base memory 0~640K
0C	Initialize interrupt vector 00-1FH
0D	Initialize ISA VGA
41H	Enable FDD and detect media type
FFH	Boot from FDD

Post Codes (Non-Compressed Version)

POST (hex)	DESCRIPTION
01-02	Reserved
C0	Turn off OEM specific cache, shadow...
03	1. Initialize EISA registers (EISA BIOS only) 2. Initialize all standard devices with default values. These devices include: -DMA controller (8237) -Programmable Interrupt Controller (8259) -Programmable Interval Timer (8254) -RTC chip
04	Reserved
05	1. Keyboard Controller Self-Test 2. Enable Keyboard Interface
06	Reserved
07	Verifies CMOS's basic R/W functionality
BE	Programs default values into chipset according to the MODBINable Chipset Default Table
C1	Auto-detection of onboard DRAM and Cache
C5	Copy the BIOS from ROM into E0000-FFFFF shadow RAM to speed POST
08	Test the first 256K DRAM
09	1. Programs the configuration register of Cyrix CPU according to MODBINable Cyrix Register Table 2. OEM specific cache initialization (if needed)
0A	1. Initialize the first 32 interrupt vectors with corresponding interrupt handlers Initialize INT no. from 33-120 with Dummy (Spurious) Interrupt Handler 2. Issue CPUID instruction to identify CPU type 3. Early Power Management initialization (OEM specific)

Post Codes (All Versions)

POST (hex)	DESCRIPTION
0B	1. Verify the RTC time is valid or not 2. Detect bad battery 3. Read CMOS data into BIOS stack area 4. PnP initializations including (PnP Bios only) -Assign CSN to PnP ISA card -Create resource map from ESCD 5. Assign IO & Memory for PCI devices (PCI BIOS only)
0C	Initialization of the BIOS Data Area (40:00-40:FF)
0D	1. Program some of the Chipset's values according to Setup (Early Setup Value Program) 2. Measure CPU speed for display and decide the system clock speed 3. Video initialization includes Monochrome, CGA, EGA/VGA. If no device is found, speaker will issue a long beep followed by two short beeps
0E	1. Initialize the APIC (Multi-Processor BIOS only) 2. Test video RAM (If monochrome display device found) 3. Show messages including: -Award Logo, Copyright string, BIOS Date code & Part no. -OEM specific sign on messages -Energy Star Logo (Green BIOS only) -CPU brand, type & speed -Test system BIOS checksum (Non-Compress Version only)
0F	DMA channel 0 test
10	DMA channel 1 test
11	DMA page rgisters test
12-13	Reserved
14	test 8254 Timer 0 Counter 2
15	Test 8259 interrupt mask bits for channel 1
16	Test 8259 interrupt mask bits for channel 2
17	Reserved
19	Test 8259 functionality
1A-1D	Reserved
1E	If EISA NVM checksum is good, execute initialization (EISA BIOS only)
1F-29	Reserved
30	Detect Base Memory and Extended Memory Size
31	1. Test Base Memory from 256K to 640K 2. Test Extended Memory from 1 MB to top of memory
32	1. Display Award Plug & Play BIOS extension message (PnP BIOS only) 2. Program all onboard super I/O chips (if any) including COM ports, LPT ports, FDD ports...according to setup values
33-3B	Reserved
3C	Set flag to allow users to enter CMOS Setup Utility
3D	1. Initialize Keyboard 2. Install PS/2 mouse
3E	Try to turn on level 2 cache (NOTE: some chipset may need to turn on the L2 cache at this stage. Usually the cache is turned on later in POST 61H)
BF	1. Program the rest of the chipset's values according to setup (Later Setup Value Program) 2. If auto-configuration is enabled, program the chipset with pre-defined values found in the MODBINable Auto-Table
41	Initialize Floppy Disk Drive controller
42	Initialize Hard Disk Drive controller
43	If it is a PnP BIOS, initialize serial and parallel ports
44	Reserved
45	Initialize math coprocessor
46-4D	Reserved
4E	If there is any error detected (such as video, kb, etc.) show all the error messages on screen & wait for user to press <F1> key
4F	1. If password is needed, ask for password 2. Clear the Energy Star Logo (Green BIOS only)
50	Write all CMOS values currently in the BIOS stack area back to the CMOS
51	Reserved
52	1. Initialize all ISA ROMs 2. Later PCI initializations (PCI BIOS only) -assign IRQ to PCI devices -initialize all PCI ROMs 3. PnP Initializations (PnP BIOS only) -assign IO, Memory, IRQ & DMA to PnP ISA devices -initialize all PnP ISA ROMs 4. Program shadow RAM according to Setup settings 5. Program parity according to setup settings 6. Power Management Initialization -Enable/Disable global PM -APM interface initialization
53	1. If it is NOT a PnP BIOS, initialize serial and parallel ports 2. Initialize time value in BIOS data area by translating the RTC time value into a timer tick value
60	Setup Virus Protection (Boot Sector Protection) functionality according to Setup setting

VGA Driver Installation

Windows 3.1 and DCI display drivers AutoCAD R12/R13/ 3D studio driver

Supporting modes:

1. 640X480 256 color
2. 640X480 64K color
3. 640X480 16M color
4. 800X600 256 color
5. 800X600 64K color
6. 1024X768 256 color
7. 1024X768 64K color (2MB memory required)

Refresh rate and mode change can be made by running VMASTER.EXE under ALG2032/64 directory.

AVANCE LOGIC WINDOWS 3.1 HIGH RESOLUTION DRIVERS INSTALLATION PROCEDURE:

* IF YOU HAVE A PREVIOUS DRIVER DISKETTE, PLEASE SETUP VGA MODE, THEN START WINDOWS AND DELETE THE AVANCE LOGIC ICON GROUP. RESTART INSTALLATION FROM STEP 7.

* FIRST TIME USERS PLEASE START FROM STEP 1.6

1. CHANGE DIRECTORY TO WINDOWS 3.1 AND TYPE "SETUP".
2. SELECT "DISPLAY" AND "ENTER".
3. CHANGE TO "VGA" AND "ENTER".
4. FOLLOW THE INSTRUCTIONS ON THE SCREEN TO FINISH THE WINDOWS SETUP PROGRAM.
5. RESTART YOUR WINDOWS 3.1 PROGRAM BY TYPING "WIN" AT THE DOS PROMPT.
6. PUT THE DISTRIBUTION DISKETTE INTO DRIVE A: (OR B:)
7. SELECT "RUN" AT PULL DOWN MENU OF PROGRAM MANAGER AND MOVE THE CURSOR TO "RUN".
8. ENTER THE FILE NAME FOR AVANCE LOGIC WINDOWS DRIVER INSTALLATION

   PROGRAM A:\SETUP.EXE (OR B:\SETUP.EXE IF THE INSTALLATION DISK IS IN DRIVE B:).
9. RUN VMASTER TO SELECT RESOLUTION, COLOR DEPTH, AND REFRESH RATE WITHOUT QUITTING WINDOWS.

AutoCAD Setup

First, copy DSPALI42.EXP to DRV Subdirectory under your AutoCAD directory.

1. Make sure the AutoCAD works fine with VGA.
2. Begin AutoCAD with the reconfigure switch by typing ACAD -R
3. Select option 3 ("Configured Video Display").
4. Type Y at the "Do you want to select ..." message to display the available video options for AutoCAD.
5. Select "ALI VGA ADI v4.2, by Avance Logic, Inc".
6. Select display resolution you want.
7. Follow the directions provided by the AutoCAD program to complete your AutoCAD configuration.
8. Save your new changes. (Re-configuration is complete)
9. AutoCAD will start.

NOTE: When you reboot your system, if need to change the resolution just type ACAD -R, otherwise start AutoCAD as usual.

The drivers available on your ALG2032/2064 utility disk are as follows:

ADI Ver.	Resolution
ADI v4.2	640x480/256colors
ADI v4.2	800x600/256colors
ADI v4.2	1024x768/256colors
ADI v4.2	1280x1024/256colors (requires 2MB)

3D Studio

1. Use SET command at the DOS prompt, or your AUTOEXEC.BAT file:

SET RCPADI = (3D-Studio drive)\DSPALI42.EXP)

2. Copy DSP25128.EXP to your 3D Studio DRIVERS directory, and reconfigure your 3DS. Select the mode you want to run your system in.

The 2032/2064 new display modes:

-- 640x480 256-color
-- 800x600 256-color
-- 1024x768 256-color
-- 1280x1024 256-color (requires 2MB)

NOTE: Check 3D Studio manuals for additional information on configuring program for ALG2032/2064 new drivers.

Windows 95 Drivers

Instructions for installing Avance Logic video card in Windows 95:

Case1: Windows 95 is not installed on the system and an Avance Logic video card is Installed on the system motherboard.

1. Install Windows 95 by following the manufacturer's installation procedure.
2. Double click on the My Computer icon when the installation is complete to bring up the My Computer window.
3. Double click on the Control Panel icon to bring up the Control Panel window.
4. Double click on the Display icon to bring up the Display Properties window.
5. Click on the Settings tab to bring the Settings page of the Display Properties window to the front.
6. Click on the [Change Display Type] button to bring up the Change Display Type window.
7. Click on the [Change .....] button in the Adapter Type section of this window to bring up the Selection Device window.
8. Click on the [Have Disk] button to bring up th Install From Disk window. Follow the instructions in this window for inserting the diskette containing the driver into the selected diskette driver and then click on the [OK] button to bring up another Select Device window.
9. Insure that "Avance Logic 2032/2064" is highlighed in the Select Device window and then click on the [OK] button. The Copying Files information box will come up indicating that files are being copied to the hard disk drive. When the copying is complete, the Change Display Type window will return.
10. Click on the [Change.....] button in the Monitor Type selection of the Change Display Type window and follow the instructions for selecting the appropriate monitor type.
11. Click on [Close] button in the Change Display Type window to bring back the Display Properties window.
12. Select the desired resolution, color, and font size values in the Display Properties window and then click on the [Apply] button to bring back the System Settings Change window.
13. Click on the [Yes] button in the System Settings Change window to restart the system and activate the new settings.

Case 2: Windows 95 is installed on the system and a video card other than Avance Logic video card is preinstalled on the system motherboard.

Note: It is recommend that the graphic mode to be set to Standard VGA before beginning this installation.

1. Power off the system, remove the existing video card, and insert the Avance Logic video card.
2. Power on the system. The New Hardware Found window will be displayed. In this window, select "Driver from disk provided by hardware Manufacturer." and then click on the [OK] button to bring up the Install From Disk window.
3. Follow the instructions in the Install From Disk window. Insert the diskette containing the driver into the selected diskette drive and then click on the [OK] button to bring up Select Device window.
4. Insure that "Avance Logic 2032/2064" is highlighted in the Select Device window and then click on the [OK] button. The Copying Files message box will come up indicating that files are being copied to the hard disk drive. When the copying is complete, the Change Display Type window will come up.
5. Click on the [Change .....] button in the monitor Type section of the Change Display Type window and follow the instruction for selecting the appropriate monitor type. This step may be skipped if the correct monitor type was selected previously.
6. Click on the [Close] button in the Change Display Type window to bring up the Display Properties window.
7. Select the desired resolution, color, and font size values in Display Properties window and then click on the [Apply] button to bring back the System Settings Change window.
8. Click on the [Yes] button in the System Settings Change window to activate the new settings. The refresh rate will be set to the highest one defined in MONITOR*.INF automatically.