

# MAP 0500: Color/Graphics Monitor Adapter

Symptom Explanation	Conditions That Could Cause This Symptom
You have entered this MAP because you were unable to complete the POST, you suspect a color/graphics problem, or you received a color/graphics error message.	<ul style="list-style-type: none"><li>• The Color/Graphics Monitor Adapter is failing.</li><li>• The display is failing.</li><li>• The power cord is failing.</li><li>• The power connector is failing.</li></ul>

## 001

- Power off the system.
- Insert the Advanced Diagnostics diskette into drive A.
- Turn the brightness and contrast controls fully clockwise.
- Power on the system and note any audio responses during the POST.

## WAS THE AUDIO RESPONSE ONE LONG AND TWO SHORT BEEPS?

Yes No

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### 002

Go to Step 008 in this MAP.

## 003

- Check the switch setting on the system board.

## IS THE SYSTEM BOARD SWITCH SETTING CORRECT?

Yes No

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### 004

Correct the switch setting. Go to Step 001 in this MAP to verify system operation.

(Step 005 continues)



**014** (continued)

- Power on the color display.

**IS THE SCREEN STILL DARK (NO ILLUMINATION)?**

**Yes**    **No**

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|  
**015**

Replace the Color/Graphics Monitor Adapter.

**016**

Replace the color display.

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**017**

(From Step 013 in this MAP)

- Check the display power cord for continuity.

**DOES THE POWER CORD HAVE CONTINUITY?**

**Yes**    **No**

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**018**

Replace the power cord.

**019**

Replace the color display.

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**020**

(From Step 011 in this MAP)

**IS THE FAILING DISPLAY AN IBM PORTABLE PERSONAL COMPUTER DISPLAY?**

**Yes**    **No**

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**021**

Go to Step 075 in this MAP.

**022**

- Refer to Figure 1 on page 0500-4 and measure the voltage at the display power connector P12. Do not unplug the connector.

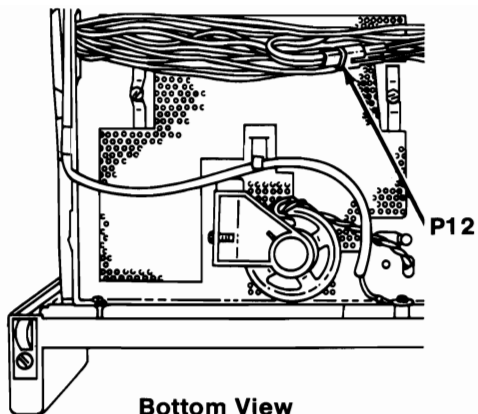


Figure 1. Portable Personal Computer Power Connector

**DID THE VOLTAGE AT P12 MEASURE 12 VDC?**

Yes    No

023

Replace the power supply.

024

Go to Step 075 in this MAP.

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025

(From Step 009 in this MAP)

**IS THE IMAGE ON THE SCREEN STEADY AND READABLE?**

Yes    No

026

Go to Step 028 in this MAP.

027

Go to Step 030 in this MAP.

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**028**

(From Step 026 in this MAP)

- Perform the vertical-hold adjustment, if possible.

**Note:** The IBM Portable Personal Computer display does not have a vertical-hold adjustment; go to Step 075 in this MAP.

**DID ADJUSTING THE VERTICAL HOLD SOLVE THE PROBLEM?**

Yes    No

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**029**

Go to Step 075 in this MAP.

**030**

(From Step 027 in this MAP)

- Run the Color/Graphics Monitor Adapter tests. Use the **(RUN TESTS ONE TIME)** option.

**IS THE CURSOR VISIBLE AND IN THE CORRECT POSITION?**

Yes    No

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**031**

Replace the Color/Graphics Monitor Adapter.

**032**

- The image on the screen may be distorted or the characters may be the wrong size, as shown in Figure 2 on page 0500-6.

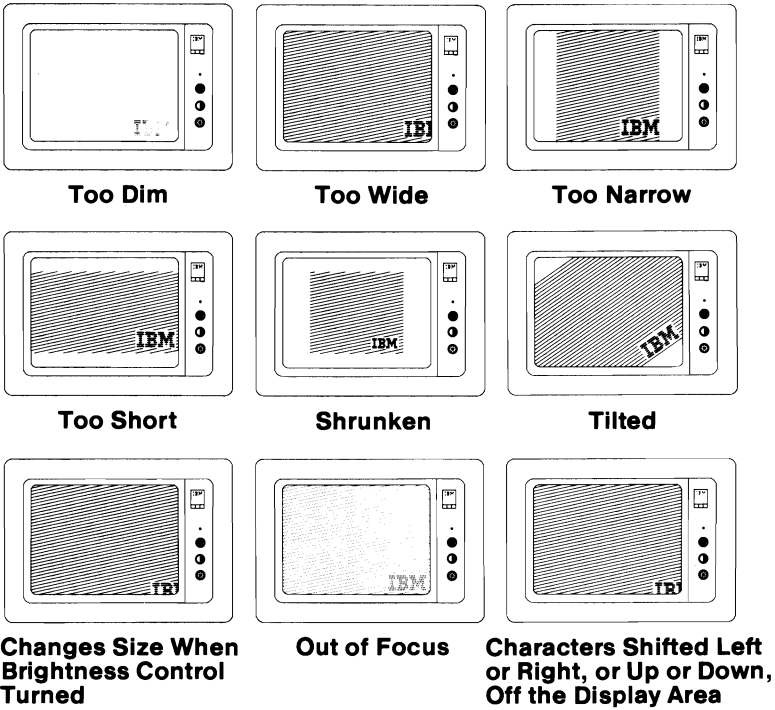


Figure 2. Distorted Images

**IS THE IMAGE ON THE SCREEN DISTORTED OR THE WRONG SIZE? (Figure 2)**

Yes    No  
 |        |  
       033  
       Go to Step 038 in this MAP.

**034 DOES THE DISPLAY HAVE A VERTICAL-SIZE ADJUSTMENT?**

Yes    No  
 |        |  
       035  
       Replace the display.

**036**  
 (Step 036 continues)

**036** (continued)

- Perform the vertical-size adjustment.

**DID THE VERTICAL-SIZE ADJUSTMENT CORRECT THE PROBLEM?**

Yes    No

037

Replace the display.

**038**

(From Step 033 in this MAP)

- Select **10 (RUN ALL ABOVE TESTS)** then press **Enter**.

**DID THE DISPLAY ATTRIBUTES SCREEN APPEAR?**

Yes    No

039

Replace the Color/Graphics Monitor Adapter.

**040**

**DO YOU HAVE AN IBM COLOR DISPLAY, IBM PORTABLE DISPLAY, OR ANOTHER DIRECT-DRIVE DISPLAY?**

Yes    No

041

Go to Step 047 in this MAP.

**042**

**DO YOU HAVE AN IBM COLOR DISPLAY?**

Yes    No

043

Go to Step 052 in this MAP.

**044**

- Adjust the brightness and contrast controls until the intensified line is brighter than the other lines.

(Step 044 continues)

**044** (continued)

**WERE YOU ABLE TO ADJUST FOR AN INTENSIFIED LINE?**

Yes    No

|            |  
**045**

Go to Step 075 in this MAP.

**046**

Go to Step 052 in this MAP.

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**047**

(From Step 041 in this MAP)

A composite color display may be limited to two color shades, with the darker shade on top.

**ARE ALL COLORS PRESENT AND THE CORRECT SHADE?**

Yes    No

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**048**

Go to Step 050 in this MAP.

**049**

Go to Step 052 in this MAP.

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**050**

(From Step 048 in this MAP)

- Adjust the variable capacitor on the system board.

**DID ADJUSTING THE VARIABLE CAPACITOR CORRECT THE PROBLEM?**

Yes    No

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**051**

Go to Step 075 in this MAP.

**052**

(From Steps 043, 046, and 049 in this MAP)

IBM Color Display - Each line on the screen should match the description stated in the line.

(Step 052 continues)



**052** (continued)

IBM Portable Display - shades of amber only.

Direct-drive displays - may not support the intensified line.

**DO ALL TEXT LINES MATCH THEIR DESCRIPTIONS?**

Yes No

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**053**

Replace the Color/Graphics Monitor Adapter.

**054**

- Press **Y** then **Enter**. The Character Set screen appears.

**ARE ALL CHARACTERS PRESENT AND CORRECT ON THE DISPLAY? (NO EXTRA DOTS IN CHARACTER BOXES OR MISSING DOTS.)**

Yes No

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**055**

Replace the Color/Graphics Monitor Adapter.

**056**

Press **Y** then **Enter**. The 80x25 Display screen appears.

**IS THE BORDER BLACK AND ARE THE CHARACTERS PRESENT AND SOLID?**

Yes No

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**057**

Replace the Color/Graphics Monitor Adapter.

**058**

- Press **Y** then **Enter** The 40X25 Display screen appears.

**ARE THE CHARACTERS PRESENT AND COMPLETE?**

Yes No

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**059**

Replace the Color/Graphics Monitor Adapter.

**060**

(Step 060 continues)



**064 (continued)**

**IS THE SCREEN CORRECT?**

Yes No

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|  
**065**

Replace the Color/Graphics Monitor Adapter.

**066**

**DO YOU HAVE A LIGHT PEN ATTACHED?**

Yes No

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|  
**067**

Answer the prompt on the screen and skip the Light Pen test. Go to Step 072 in this MAP.

**068**

**DO YOU WANT TO TEST THE LIGHT PEN?**

Yes No

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|  
**069**

Answer the prompt on the screen and skip the Light Pen test. Go to Step 072 in this MAP.

**070**

**Note:** The light pen test is timed. If you wait longer than 60 seconds to respond, or are not careful where you place the tip of the pen before pushing it, you may receive an error message.

Place the tip of the light pen in the center of the block and press the pen toward the screen. The displayed block will be replaced by an asterisk (\*). Repeat this procedure for each new block that appears. When the test is complete, Video Page 0 is displayed.

- Answer the prompt on the screen to start Light Pen test.

**WERE YOU ABLE TO COMPLETE THE LIGHT PEN TEST (SCREEN DISPLAYS VIDEO PAGE 0)?**

Yes No

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| (Step 071 continues)

**071**

Replace the light pen.

**072**

(From Steps 067 and 069 in this MAP)

- Follow the instructions on the screen to check the internal video addressing function of the Color/Graphics Monitor Adapter. Look for any discrepancy in the sequence of appearance of video pages 0 through 7.

### **WERE ALL EIGHT PAGES DISPLAYED?**

Yes    No

**073**

Replace the Color/Graphics Monitor Adapter.

**074**

You have successfully completed the Advanced Diagnostic tests. If you suspect an intermittent problem, start an error log. If you need instructions, refer to the Reference manual.

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**075**

(From Steps 021, 024, 028, 029, 045, and 051 in this MAP)

The following information helps you diagnose a problem in the color display through the use of audio responses.

- Power off the system.
- Insert the Advanced Diagnostics diskette into drive A.
- Power on the system; listen for the beep at the end of the POST and wait for the LED on drive A to light and then go off.
- Follow the steps in Figure 3 on page 0500-13. Listen for the "beep" each time you press **Enter**.

**Note:** Use the numbers on the top row of the keyboard; do not use the numeric keypad.

<b>Steps</b>	<b>Test Selected</b>	<b>Audio Response</b>
1. Press Ø	Run Diagnostic Tests	None
2. Press Enter	---	1 Beep
<b>Note:</b> Skip Steps 3 and 4 if you have only one display adapter in your system.		
3. Press Y or N	Is a monitor attached to every display adapter?	None
4. Press Enter	---	1 Beep
5. Press Y	Is the installed-devices list correct?	None
6. Press Enter	---	1 Beep
7. Press Ø	Run tests one time	None
8. Press Enter	---	1 Beep
9. Press 5	Select Color/Graphics Monitor Adapter test	None
10. Press Enter		2 Beeps

**Figure 3. Audio Responses**

**DID YOU RECEIVE THE CORRECT AUDIO RESPONSES?**

Yes No

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**076**

Replace the Color/Graphics Monitor Adapter.

**077**

**IS THE COLOR/GRAPHICS MONITOR ADAPTER TEST DISPLAYED ON THE SCREEN AND READABLE?**

Yes No

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**078**

Go to Step 080 in this MAP.

**079**

Go to Step 082 in this MAP.

**080**

(From Step 078 in this MAP)

**IS THE SCREEN BLANK (NO CHARACTERS OR CURSOR DISPLAYED)?**

Yes No

**081**

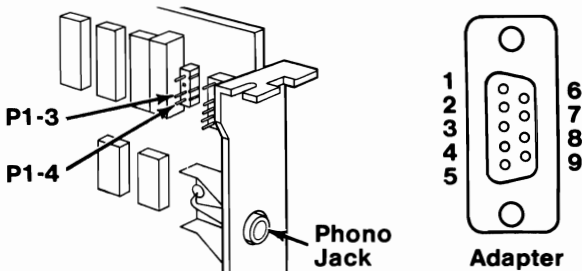
Replace the Color/Graphics Monitor Adapter.

**082**

(From Step 079 in this MAP)

- Disconnect the color display signal cable.
- Select **11** then press **Enter**.
- Set the meter to the 12 Vdc scale.
- Measure the voltage on the 9-pin signal connector between pin 2 (ground) and pins 3, 4, 5, and 6 (signal) of the Color/Graphics Monitor Adapter. The voltage should be between 2.4 and 5.5 Vdc.
- Measure the voltage between the outer edge and the center conductor of the phono jack. The voltage should be between 1.0 and 2.4 Vdc.

**Note:** If you are testing an IBM Portable Personal Computer display, you must also measure the voltage between pins P1-3 (ground) and P1-4 for 1.0 to 1.5 Vdc.



**Figure 4. Signal Connectors**

**ARE THE VOLTAGES CORRECT?**

Yes No

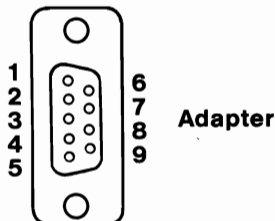
**083**

Replace the Color/Graphics Monitor Adapter.

(Step 084 continues)

**084**

- Press **Enter** one time.
- Measure the voltage on the 9-pin signal connector between pin 2 (ground) and pins 3, 4, 5, and 6 (signal) of the Color/Graphics Monitor Adapter. The voltage should be between 0.0 and 0.5 Vdc.
- Measure the voltage between the outer edge and the center conductor of the phono jack. The voltage should be between 0.0 and 0.9 Vdc.



**Figure 5. Color/Graphics Monitor Adapter Test**

**ARE THE VOLTAGES CORRECT?**

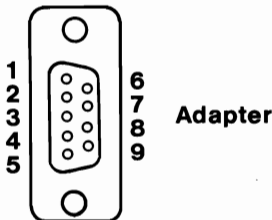
Yes    No

**085**

Replace the Color/Graphics Monitor Adapter.

**086**

- Press **9** and listen for two beeps.
- Measure the voltage on the 9-pin signal connector between pins 2 (ground) and 8 of the Color/Graphics Monitor Adapter. The voltage should be between 0.0 and 0.7 Vdc.
- Measure the voltage between pins 2 (ground) and 9. The voltage should be between 0.0 and 0.3 Vdc.
- Measure the voltage between the outer edge and the center conductor of the phono jack. The voltage should be between 0.4 and 1.5 Vdc.



**Figure 6. Color/Graphics Monitor Adapter Test**

**086** (continued)

**ARE THE VOLTAGES CORRECT?**

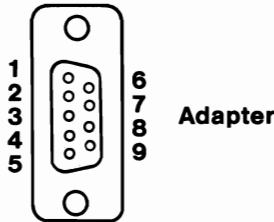
Yes No

**087**

Replace the Color/Graphics Monitor Adapter.

**088**

- Select **12** then press **Enter**.
- Measure the voltage between pins 2 (ground) and 8 on the 9-pin signal connector of the Color/Graphics Monitor Adapter. The voltage should be between 0.8 and 1.5 Vdc.
- Measure the voltage between pins 2 (ground) and 9. The voltage should be between 0.3 and 1.0 Vdc.
- Measure the voltage between the outer edge and the center conductor of the phono jack. The voltage should be between 0.2 and 0.6 Vdc.



**Figure 7. Color/Graphics Monitor Adapter Test**

**ARE THE VOLTAGES CORRECT?**

Yes No

**089**

Replace the Color/Graphics Monitor Adapter.

**090**

Replace the display.

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