

**IBM Personal System/2  
Hardware Maintenance  
Library Supplement  
PS/2 XGA-2 Display Adapter/A**

September 1992

This package contains an update to the IBM Personal System/2 *Hardware Maintenance Service* manual (part number 15F2200, form number SBOF-3988-00) and *Hardware Maintenance Reference* manual (part number 15F2190, form number SBOF-3989-00).

**Instructions for updating the manuals are on page ii.**

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## **Instructions**

1. Insert the reference supplement behind the "Options and Adapters (Micro Channel)" tab in the *IBM Personal System/2 Hardware Maintenance Reference* manual (part number 15F2190, form number SBOF-3989-00).
2. Insert the service supplement into the *IBM Personal System/2 Hardware Maintenance Service* manual (part number 15F2200, form number SBOF-3988-00).
3. Use the diskette supplied in this package to update a Reference Diskette or System Program as required.

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# **IBM PS/2 XGA-2 Display Adapter/A Hardware Maintenance Reference Supplement**

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## **IBM PS/2 XGA-2 Display Adapter/A**

The IBM® PS/2® XGA®-2 Display Adapter/A is designed for Personal System/2® Micro Channel® computers. It is a high-resolution display adapter that supports a wide variety of display resolutions and refresh rates. For additional information see “Graphics Modes” on page 2.

The XGA-2 Display Adapter/A has 1MB of video random access memory (VRAM). (MB equals approximately 1 000 000 bytes.)

The adapter can be installed in IBM Personal System/2 Micro Channel systems with a microprocessor in the 386 or 486 families.

The adapter drives analog displays equipped with a 15-pin, direct-drive analog interface.

### **Option Diskette**

An Option Diskette is supplied with the XGA-2 Display Adapter/A. It contains test procedures and configuration data for the adapter.

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## **Display Adapter Compatibility**

The XGA-2 Display Adapter/A (with a display attached) is the default VGA source when a display is not attached to the system unit display connector, or to an XGA-2 Display Adapter/A installed in the base video extension slot. In this case a display adapter using the auxiliary video extension slot does not display VGA video.

## **Video Palette Initialization**

When the XGA-2 Display Adapter/A is installed, the video palette is initialized for the attached color or monochrome display.

## Graphics Modes

The following are examples of the resolutions that are available with the XGA-2 Display Adapter/A.

The software supplied with the adapter automatically sets IBM displays to the best possible resolution and refresh rate.

| Resolution  | Frame Rate (Hz) | Line Rate (KHz) | I/NI | IBM Display Support (Model)  |
|---|-----------------|-----------------|------|--|
| 640x480   | 60              | 31.6            | NI   | 7544, 7554, 8503, 8504, 8507, 8512, 8513, 8514, 8515, 8516, 8517, 8518 |
| 640x480   | 72 <sup>1</sup> | 37.9            | NI   |  |
| 640x480   | 72              | 37.8            | NI   |  |
| 640x480   | 75              | 39.4            | NI   | 9515, 9517, 9518   |
| 800x600   | 56 <sup>2</sup> | 35.2            | NI   |  |
| 800x600   | 60 <sup>2</sup> | 37.9            | NI   |  |
| 800x600   | 72 <sup>1</sup> | 48.1            | NI   |  |
| 800x600   | 75              | 50.0            | NI   |  |
| 1024x768  | 43.5            | 35.6            | I    | 8507, 8514, 8515, 8516, 7554, 8517                                     |
| 1024x768  | 60 <sup>2</sup> | 48.4            | NI   |  |
| 1024x768  | 70              | 57.0            | NI   | 8517   |
| 1024x768  | 70 <sup>1</sup> | 56.5            | NI   |  |
| 1024x768  | 72              | 58.1            | NI   | 9517   |
| 1024x768  | 75              | 61.1            | NI   | 9515   |
| 1280x1024   | 50              | 53.4            | I    |  |
| <p>1 Video Electronics Standards Association (VESA) Standard<br/>                 2 VESA Guideline<br/>                 I = Interlaced<br/>                 NI = Non-Interlaced</p> |                 |                 |      |  |

## **Non-IBM Displays**

Supported resolutions (table on previous page) which are not available on IBM displays, are available using some non-IBM displays. These displays range in capability from low cost-low function to high cost-high function. Most of these displays respond as an IBM 8514 display when the software supplied with the XGA-2 Display Adapter/A is used. As a result, IBM 8514 resolutions and refresh rates are used as default.

The software supplied with the XGA-2 Display Adapter/A allows you to override the default screen resolution. If you do override the default screen resolution, with a resolution which does not meet or exceeds the capability of the attached display, unpredictable results might occur.

**Warning:** Some multisync displays may appear to function correctly; however, damage may occur over time.

### **Notes:**

1. You must only select resolutions which are suitable for the display attached to the XGA-2 Display Adapter/A.
2. The use of the resolution override should be avoided if the display attached to the XGA-2 Display Adapter/A is to be changed frequently with displays of varying characteristics.

The IBM XGA-2 Display Adapter/A along with certain IBM displays, computers and some software has been certified to meet the International Standards Organizations (ISO) standard 9241/3. IBM cannot guarantee that all non-IBM displays attached to the XGA-2 Display Adapter/A will provide acceptable front of screen characteristics or meet other health and safety standards.

## Specifications

The power requirements for the XGA-2 Display Adapter/A are:

| Amps | Watts | Volts |
|------|-------|-------|
| 1.5  | 6.0   | + 5.0 |

## Environment

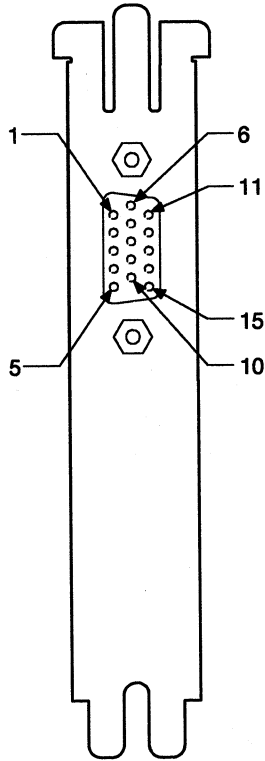
- Temperature:
  - Operating: 0°C to 55°C (32°F to 131°F)
- Humidity:
  - Operating: 10% to 90% (non-condensing)

## Repair Information

These adapters are not repairable in the field. They must be returned in accordance with existing local procedures.

## Connector Information

The 15-pin, analog video connector of the XGA-2 Display Adapter/A extends through the rear panel of the system unit.





The following table shows the signals and corresponding pin numbers for the 15-pin analog video connector.

| Pin | Color Mode     | Monochrome Mode |
|-----|----------------|-----------------|
| 1   | Red Video      | Reserved        |
| 2   | Green Video    | Video           |
| 3   | Blue Video     | Reserved        |
| 4   | Display ID 2   | Display ID 2    |
| 5   | Self-Test      | Self-Test       |
| 6   | Red Ground     | Reserved        |
| 7   | Green Ground   | Video Ground    |
| 8   | Blue Ground    | Reserved        |
| 9   | Not Connected  | Not Connected   |
| 10  | Sync Ground    | Sync Ground     |
| 11  | Display ID 0   | Display ID 0    |
| 12  | Display ID 1   | Display ID 1    |
| 13  | External Hsync | External Hsync  |
| 14  | External Vsync | External Vsync  |
| 15  | Display ID 3   | Display ID 3    |

## Diagnostic Information

The following diagnostic aids are available for the XGA-2 Display Adapter/A:

- Self-Test
- Advanced Diagnostic Test

### Self-Test

The diagnostic code in the ROM on the XGA-2 adapter is used for configuring and testing the adapter during the self-test. If an XGA-2 self-test error occurs, the system sounds one long beep followed by two short beeps. An 8-digit error code (0243XXXX) may also be displayed on the screen.

**Note:** If a **024374XX** error code is displayed, **do not** replace the adapter. Copy the XGA-2 Display Adapter/A Option Diskette to the backup copy of the system programs/Reference Diskette; then run configuration.

## **Advanced Diagnostic Test**

To run the XGA-2 Display Adapter/A Advanced Diagnostic Test, do the following:

1. If your system programs are on a hard disk, turn on all attached devices. Then turn on the computer and go to the Main Menu of the system programs. If your system programs are not on a hard disk, insert the backup copy of the Reference Diskette into drive A. Turn on all attached devices, then turn on the computer.

**Note:** If you have not already copied the adapter Option Diskette data to the system programs, do that now.

2. When the Advanced Diagnostic Test starts, the list of installed devices shows that the XGA-2 adapter is installed.
3. Follow the instructions on the screen to run the adapter test or to display the test patterns.

**Note:** When the XGA video is being tested, the display attached to the XGA adapter might not be blank; although, the test message implies that it is. The screen displays random patterns while the test is running.

4. When the Advanced Diagnostic Test is running, the message panel confirms which type of adapter is being tested.
5. If the test reveals a problem with the XGA-2 adapter, the system displays a 0243XXXX error code. The second digit from the right (0243XXXX) is the slot number of the failing adapter.