COVER Book Cover

IBM Personal System/2

XGA-2 Device Driver
Installation Instructions

Part Number 42G0294

COVER Book Cover

IBM Personal System/2

XGA-2 Device Driver
Installation Instructions

Part Number 42G0294

NOTICES Notices

```
+--- Note ------------------------------------------------------------+
¦                                                                     ¦
¦ Before using this information and the product it supports, be sure ¦
¦ to read the general information under Appendix B, "Notices" in      ¦
¦ topic B.0.                                                          ¦
¦                                                                     ¦
+---------------------------------------------------------------------+
```

```
+--- Note ------------------------------------------------------------+
¦                                                                     ¦
¦                                                                     ¦
¦ Before using this information and the product it supports, be sure ¦
¦ to read the general information under Appendix B, "Notices" in      ¦
¦ topic B.0.                                                          ¦
¦                                                                     ¦
¦                                                                     ¦
+---------------------------------------------------------------------+
```

EDITION Edition Notice
First Edition (November 1992)

**The following paragraph does not apply to the United Kingdom or any
country where such provisions are inconsistent with local law:**
INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION
"AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED,
INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF
MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do
not allow disclaimer of express or implied warranties in certain
transactions, therefore, this statement may not apply to you.

This publication could include technical inaccuracies or typographical
errors. Changes are periodically made to the information herein;
these changes will be incorporated in new editions of the publication.
IBM may make improvements and/or changes in the product(s) and/or the
program(s) described in this publication at any time.

It is possible that this publication may contain reference to, or
information about, IBM products (machines and programs), programming,
or services that are not announced in your country. Such references
or information must not be construed to mean that IBM intends to
announce such IBM products, programming, or services in your country.

Requests for technical information about IBM products should be made
to your IBM Authorized Dealer or your IBM Marketing Representative.

PREFACE About This Book
This book describes the installation of the device drivers for a computer
with one of the following XGA subsystems installed:

    XGA subsystem on the system board

    XGA Display Adapter/A

    XGA-2 subsystem on the system board

    XGA-2 Display Adapter/A

Several device drivers and files are discussed in detail in this
publication.

    The Display Mode Query and Set (DMQS) files provide information about
    the display connected to an XGA-2 subsystem on the system board or an
    XGA-2 Display Adapter/A.

    The XGA DOS Adapter Interface device driver allows 8514/A Adapter
    Interface or XGA DOS Adapter Interface application programs to be run.

    The XGA Windows device driver allows Microsoft Windows Version 3.1 to
    be run using XGA features.

    The XGA device driver for AutoCAD runs application programs for
    AutoCAD Release 11 or Release 12.

Subtopics

PREFACE.1 Who Should Read This Book

This book is intended for those who have an XGA subsystem installed in
their computer and who will install and configure the device drivers for
that subsystem.

PREFACE.2 Related Publications

In addition to this book, you might want to refer to the following:

   IBM Personal System/2 Video Technical Reference, part number 42G2193.

   The original documentation that came with your computer.

Technical publications are available for purchase from IBM Authorized
Dealers and through the *IBM Technical Directory*.

1.0 Product Description
The *IBM PS/2 XGA Device Drivers Diskette* (Version 2.00 or later) in this
package contains the following device drivers and files:

    Display Mode Query and Set (DMQS) files
    Device driver for the XGA (*) DOS Adapter Interface
    Device driver for Microsoft (**) Windows** Version 3.1
    Device driver for AutoCAD** Release 11 or 12

AIX* support for the XGA video subsystem is an integral part of AIX PS/2*
1.3. No device drivers for AIX are supplied in this package.

OS/2* support for the XGA video subsystem and Windows application programs
is an integral part of OS/2 2.0. No device drivers for OS/2 support are
supplied in this package.

Notes:

1.   The device drivers and instructions in this package should not be used
     with OS/2 2.0 unless stated otherwise.

2.   Support for the following features requires a computer that has OS/2
     2.00.1 or later preinstalled which supports XGA-2. Service Pak #
     XR06050 is required to upgrade OS/2 2.0 to support XGA-2. The Service
     Pak can be obtained by calling 1-800-3-IBMOS2 (1-800-342-6672).

         Use of IBM* 95xx displays
         Use of 64K color mode
         Use of WIN-OS/2* support
         Display of 1024 x 768 noninterlaced mode with a non-IBM display
         Display of 800 x 600 mode

Descriptions of the device drivers and files follow:

    The Display Mode Query and Set (DMQS) files

    These files are required only with the XGA-2 subsystem on the system
    board or the XGA-2 Display Adapter/A. It is not necessary to install
    this option for use with an XGA Display Adapter/A or XGA subsystem on
    the system board.

    Install the XGA DMQS Display program *first* to take full advantage of
    the XGA-2 video subsystem on the system board or an XGA-2 Display
    Adapter/A, (refer to "Changing the XGA-2 Display Configuration" in
    topic 4.0).

    Note: Additional information about the XGA DMQS Display program can
            be found in the READ.ME file in the \DIFINST directory of the
            IBM PS/2 XGA Device Drivers Diskette.

    The XGA DOS Adapter Interface device driver

    The XGA DOS Adapter Interface device driver is used if you want to run
    DOS applications that are written for the 8514/A Adapter Interface or
    XGA DOS Adapter Interface.

    Do *not* install this device driver if you intend to install one of the
    XGA Windows device drivers. This device driver can be used in a OS/2
    2.0 DOS full-screen session.

    Note: Additional information about the XGA DOS Adapter Interface can
            be found in the READ.ME file in the \XGAPCDOS directory of the
            IBM PS/2 XGA Device Drivers Diskette.

    Microsoft Windows device driver

    If you are installing the XGA device driver for Microsoft Windows
    Version 3.1:

    -    You might need your Windows diskettes, even if the Windows program
         is already installed.

    -    You will need to know the resolutions your display can support.
         Refer to the documentation that came with your display to
         determine the resolution.

    Note: More information about the Windows Version 3.1 device driver
            can be found in the READ.ME file in the \WINV31 directory on
            the *IBM PS/2 XGA Device Drivers Diskette*.

    AutoCAD device driver

The XGA device driver for AutoCAD should be installed if you have
installed AutoCAD Release 11 or 12.

Note: More information about the XGA Device Driver for AutoCAD can be
found in the READ.ME file in the \ACAD directory on the *IBM
PS/2 XGA Device Drivers Diskette*.

Contact your place of purchase if the *IBM PS/2 XGA Device Drivers Diskette*
is missing or damaged.

(*) Trademark of the IBM Corporation.

(**) Microsoft and Windows are trademarks of the Microsoft
Corporation and AutoCAD is a trademark of Autodesk, Inc.

2.0 Before You Begin

Note: If you will be using an XGA Display Adapter/A or an XGA-2 Display
Adapter/A and have not yet installed it, refer to the installation
instructions for that adapter. If you are installing this adapter
in a computer that has no diskette drives (*medialess*), check with
your Local Area Network (LAN) administrator for instructions about
installing device drivers.

You must have at least one of the following:

    An XGA subsystem on the system board

    An XGA Display Adapter/A

    An XGA-2 subsystem on the system board

    An XGA-2 Display Adapter/A

Your operating system must be installed in your computer.

If you plan to install an XGA Windows device driver, be sure Microsoft
Windows Version 3.1 is installed in your computer before you install the
XGA Windows device driver.

If you plan to install the XGA AutoCAD device driver, be sure AutoCAD
Release 11 or 12 is installed in your computer before you install the XGA
AutoCAD device driver.

Note: The XGA subsystem is supported by DOS Version 3.3 and later.

3.0 Installing the DMQS Files

You *must* install the XGA DMQS Files first to take full advantage of the XGA-2 subsystem on the system board or an XGA-2 Display Adapter/A.

To install the files:

1. Turn on the computer.

2. Insert the *IBM PS/2 XGA Device Drivers Diskette* in drive A. At a DOS command prompt (usually the c:\ prompt), type **a:install** and press **Enter**.

3. At the DOS Installation Program for the XGA Device Drivers screen, select **Install/Update XGA DMQS Display Information File(s)**. Do *not* press **Enter**.

4. If a diskette containing display identification information *was not* supplied with the display you attached to the XGA subsystem, continue with step 5.

    If a diskette containing display identification information *was* supplied, continue with step 6.

5. At the next menu, select **Install all XGA DMQS Display Information Files**.

    Press **Enter** and follow the instructions on the screen. Then continue with step 8.

6. Insert the diskette containing the display identification information in drive A.

7. At the next menu press the **Down Arrow** ( ) to move the X to **Install specific XGA DMQS Display Information File(s)**.

    Press **Enter** and follow the instructions on the screen. Then continue with the next step.

8. Press **F3** twice to exit from the DMQS Display Information File Installation Program.

9. Select **Quit Installation Program**

10. Remove any diskette from drive A.

11. Turn off the computer. The DMQS display information files are now installed.

4.0 Changing the XGA-2 Display Configuration
This selection allows you to override your display configuration. It
should *not* be used with:

    XGA Display Adapter/A
    XGA subsystem on the system board
    An IBM PS/2 display attached to either an XGA-2 Display Adapter/A or
    an XGA-2 subsystem on the system board.

If you have an IBM PS/2 display, it will automatically be recognized and
used to its best capability. Do not follow this procedure. If you do *not*
have an IBM PS/2 display, this function will allow you to utilize the
resolution capabilities of the IBM 63*xx* displays and most non-IBM
displays. Refer to Appendix A, " XGA-2 Graphics Modes" in topic A.0 for
more information.

To change your display configuration:

1. Turn on the computer.

2. Insert the *IBM PS/2 XGA Device Drivers Diskette* in drive A. At a DOS
    command prompt (usually the c:\ prompt), type
    a:install and press **Enter**.

3. At the DOS Installation Program for the XGA Device Drivers screen,
    select **Install/Update XGA DMQS Display Information File(s)**. Do *not*
    press **Enter**.

4. Select **Change XGA Display Configuration Profile**. Press **Enter** and
    follow the instructions on the screen.

    Note: Overriding the default with a resolution that does not meet or
             exceeds the supported resolution, can yield unpredictable
             results.

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

5. After selecting your configuration, press **Enter** and return to the XGA
    DMQS (Display Mode Query/Set) Display Information File Installation
    Program Main Menu.

6. Press **F3** once to exit from the DMQS Display Information File
    Installation Program.

7. Select **Quit Installation Program**.

5.0 Installing the XGA DOS Adapter Interface Device Driver
To install the XGA DOS Adapter Interface device driver:

1. Turn on the computer.

2. Insert the *IBM PS/2 XGA Device Drivers Diskette* in drive A. At a DOS
    command prompt (usually the c:\ prompt), type
    a:install and press **Enter**.

3. Select **Install the DOS Adapter Interface Device Driver**. Do *not* press
    Enter.

4. Follow the instructions on the screen.

6.0 Installing the XGA Device Driver for Microsoft Windows Version 3.1
Refer to the documentation that came with Windows Version 3.1 for
information about installing the Windows Version 3.1 program. You might
need your Windows diskettes, even if the program is already installed on
your computer.

To install the XGA device driver for Windows Version 3.1:

1. Turn on the computer.

2. From a DOS command prompt in the directory you have chosen for Windows
    (for example \WINDOWS), type **setup** and press **Enter**.

3. When you see the panel that describes your system configuration, use
    the cursor keys to highlight the **Display** choice and press **Enter**.

4. You will see a list of display adapters. Use the cursor keys to
    highlight the **Other (Requires disk provided by a hardware
    manufacturer)** choice and press **Enter**.

5. When you are prompted to insert the display device driver diskette
    provided by the hardware manufacturer, change the command prompt area
    to **a:\winv31**. Insert the *IBM PS/2 XGA Device Drivers Diskette* in
    drive A and press **Enter**.

6. You are directed to select one resolution from a list similar to the
    following:

        IBM XGA 640 x 480 256 Color
        IBM XGA 640 x 480 65536 Color (XGA-2 only)
        IBM XGA 800 x 600 256 Color (XGA-2 only)
        IBM XGA 1024 x 768 Small Fonts
        IBM XGA 1024 x 768 Large Fonts
        IBM XGA 1024 x 768 Extra Large Fonts

    Select the resolution you desire, taking into account the capabilities
    of your display. The 800 x 600 option and the 65536 color option are
    only available on an XGA-2 subsystem on the system board or an XGA-2
    Display Adapter/A. The 1024 x 768 Extra Large Fonts option should
    only be used for displays of 15 inches or smaller.

7. Follow the instructions on the screen.

8. Complete the installation by accepting the configuration information
    on the screen.

You have completed installing the XGA Device Drivers for Windows Version
3.1.

7.0 Installing the XGA Device Driver for AutoCAD Release 11 or 12
Refer to the documentation that came with the AutoCAD program for
information about installing the program.

To install the XGA device driver for AutoCAD Release 11 or 12:

1. Insert the *IBM PS/2 XGA Device Drivers Diskette* in drive A. At the
   DOS command prompt type **a:install** and press **Enter.**

2. At the Main Menu, type the number to select the **Install the
   TurboDLD-Lite AutoCAD Device Driver** option.

3. Follow the instructions on the screen. (Make note of the drive and
   directory selected.)

4. At the MAIN MENU type the number to select the **Quit Installation
   Program** option.

5. Remove the *IBM PS/2 XGA Device Drivers Diskette* from drive A.

To configure the AutoCAD program:

1. Change the drive and directory to where the TurboDLD-Lite was
   installed.

2. At the DOS command prompt, type **fastacad** and press **Enter.**

3. For Release 12 only, add ;C:\TURBODLD to the end of the ACADDRV
   envionment variable located in the ACADR12.BAT file which was created
   during AutoCAD installation. For example:

       SET ACADDRV=C:\ACAD12\DRV;C:\TURBODLD

4. Execute AutoCAD and go to the Configuration menu.

5. Type the number to select the **Configure video display** option; press
   Enter. When asked to select a different display, type **Y**; press **Enter.**

6. If you are using AutoCAD Release 11, type the number to select the **ADI
   P386 v4.0/4.1 display** option. If you are using AutoCAD Release 12,
   type the number to select the **TurboDLD Lite by Panacea Inc.** option;
   press **Enter.**

7. At the Panacea TurboDLD Lite Configuration menu, select the **Select
   Graphics Board/Resolution** option; press **Enter.**

8. Select the **Select Display Graphics Board** option; press **Enter.**

9. Select the **XGA Graphics Board** option; press **Enter.**

10. Select the **Select Display Resolution** option; press **Enter.**

11. Select the desired resolution and press **Enter.**

12. Select the **Return to previous menu** option; press **Enter.**

13. Select the **Save and Exit** option; press **Enter**. A series of questions
    are displayed. Press **Enter** repeatedly until the Configuration menu
    appears.

14. If you are using AutoCAD Release 11, type the number to select **Exit to
    main menu**; press **Enter**. If you are using AutoCAD Release 12, type the
    number to select the **Exit to drawing editor** option; press **Enter**

15. When asked, **Keep configuration changes?**, type **Y** and press **Enter.**

The file, FASTACAD.BAT, has been created in the directory you selected for
the device driver installation. This file must be started to set
environment variables for the protect mode device driver each time you
start AutoCAD. If you want the computer to automatically load FASTACAD,
add the following like to your AutoCAD startup batch file.

    CALL C:\TURBODLD\FASTACAD

Refer to the documentation that came with your operating system for more
information about editing your AUTOEXEC.BAT file.

A.0 Appendix A.   XGA-2 Graphics Modes
The table on the following page illustrates examples of the resolutions
that are available with the XGA-2 subsystem on the system board or the
XGA-2 Display Adapter/A.

The software supplied with the XGA-2 subsystem on the system board or the
XGA-2 Display Adapter/A automatically drives IBM PS/2 displays at the best
resolution and refresh rate for the display attached.

Subtopics
A.1 XGA-2 Display Support
A.2 Original Equipment Manufacturer Displays

A.1 XGA-2 Display Support

Resolution	Frame Rate (Hz)	Line Rate (KHz)	I/NI	IBM Display Support (Model)
640 x 480	60	31.6	NI	7544, 7554, 8503, 8504, 8507, 8512, 8513 8514, 8515, 8516, 8517, 8518
640 x 480	72(1)	37.9	NI	6312, 6314, 6319
640 x 480	72	37.8	NI	
640 x 480	75	39.4	NI	9515, 9517, 9518
800 x 600	56(2)	35.2	NI	
800 x 600	60(2)	37.9	NI	6312, 6314, 6319
800 x 600	72(1)	48.1	NI	
800 x 600	75	50.0	NI	
1024 x 768	43.5	35.6	I	8507, 8514, 8515, 8516, 7554, 8517
1024 x 768	60(2)	48.4	NI	6312
1024 x 768	70	57.0	NI	8517
1024 x 768	70(1)	56.5	NI	
1024 x 768	72	58.1	NI	9517, 6314, 6319
1024 x 768	75	61.1	NI	9515
1280 x 960	45	45.8	I	
1280 x 1024	45	48.8	I	
1360 x 1024	45	48.9	I	
(1) Video Electronics Standards Association (VESA) Standard (2) VESA Guideline I = Interlaced NI = Noninterlaced				

A.2 Original Equipment Manufacturer Displays

Supported resolutions (table on previous page) which are not available on
IBM displays, are available using some non-IBM original equipment
manufacturer (OEM) displays. These displays range in capability from low
cost/low function to high cost/high function. Most of these displays,
including the IBM 63*xx*, respond as an IBM 8514 display when queried by the
software supplied with the XGA-2 subsystem on the system board or an XGA-2
Display Adapter/A. As a result, IBM 8514 resolutions and refresh rates
are used as default.

The software supplied with the XGA-2 Display Adapter/A or a computer with
the IBM XGA-2 subsystem on the system board, allows you to override the
default screen resolution. Overriding the default with a resolution that
does not meet or exceeds the supported resolution, can yield unpredictable
results.

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

Notes:

1. You must select only resolutions that are suitable for the display
    attached to the XGA-2 subsystem on the system board or XGA-2 Display
    Adapter/A.

2. The use of the resolution override should be avoided if the display
    attached to the XGA-2 subsystem on the system board or XGA-2 Display
    Adapter/A is to be changed frequently with displays of varying
    characteristics.

3. If the display type must be changed after initial use of the
    resolution override, follow the procedure for changing the display
    configuration profile *before* changing the display attached to the
    XGA-2 subsystem. Failure to do so can yield unpredictable results.

The IBM XGA-2 subsystem on the system board (or the XGA-2 Display
Adapter/A) and certain IBM displays, computers, and some software have
been certified to meet the International Organization for Standardization
(ISO) standard 9241/3. IBM cannot guarantee that all OEM displays
attached to the XGA-2 subsystem on the system board or an XGA-2 Display
Adapter/A will provide acceptable display quality or meet other health and
safety standards.

B.0 Appendix B. Notices
References in this publication to IBM products, programs, or services do
not imply that IBM intends to make these available in all countries in
which IBM operates. Any reference to an IBM product, program or service
is not intended to state or imply that only IBM's product, program, or
service may be used. Any functionally equivalent product, program, or
service that does not infringe any of IBM's intellectual property rights
or other legally protectable rights may be used instead of the IBM
product, program, or service. Evaluation and verification of operation in
conjunction with other products, programs, or services, except those
expressly designated by IBM, are the user's responsibility.

IBM may have patents or pending patent applications covering subject
matter in this document. The furnishing of this document does not give
you any license to these patents. You can send license inquiries, in
writing, to the IBM Director of Commercial Relations, IBM Corporation,
Armonk NY 10504.

Subtopics
B.1 Trademarks and Service Marks

B.1 Trademarks and Service Marks

The following terms, denoted by an asterisk (*), used in this publication,
are trademarks or service marks of IBM Corporation in the United States or
other countries:

```
+------------------------------------------------------------------------+
¦ AIX              ¦ IBM                    ¦ OS/2                        ¦
+-----------------+------------------------+-----------------------------¦
¦ Personal        ¦ PS/2                   ¦ WIN-OS/2                    ¦
¦ System/2        ¦                        ¦                             ¦
+-----------------+------------------------+-----------------------------¦
¦ XGA             ¦                        ¦                             ¦
+------------------------------------------------------------------------+
```

The following terms, denoted by a double asterisk (**), used in this
publication, are trademarks of other companies as follows:

```
+------------------------------------------------------------------------+
¦ AutoCAD    ¦ Autodesk, Inc.                                            ¦
+------------+-----------------------------------------------------------¦
¦ Microsoft  ¦ Microsoft Corporation                                     ¦
+------------+-----------------------------------------------------------¦
¦ Windows    ¦ Microsoft Corporation                                     ¦
+------------------------------------------------------------------------+
```