Digital Semiconductor

DECchip 21130 BIOS:

An Application Note

Order Number: EC–QHV5B–TE

July 1995

This application note provides important information about the DECchip 21130 video BIOS. BIOS and system engineers can use this application note to design the DECchip 21130 into a PC motherboard or PC add-in card.

Revision/Update Information: This document supersedes the *DECchip 21130 BIOS: An Application Note* (EC–QHV5A–TE).

Operating System and Version: Any IBM PC compatible system

Software Version: Version 0.5

Digital Equipment Corporation
Maynard, Massachusetts

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DECchip 21130 BIOS Overview

The DECchip 21130 video BIOS supports all standard VGA modes ($0\text{-}13_{16}$) plus a subset of the VESA Super VGA modes. The following Super VGA modes are supported:

VESA Mode	Type	Resolution
101_{16}	Graphics	640×480, 8 bpp
102_{16}	Graphics	800×600, 4 bpp
103_{16}	Graphics	800×600, 8 bpp
104_{16}	Graphics	1024×768, 4 bpp
109_{16}	Text	132×25 characters
$10A_{16}$	Text	132×43 characters

The DECchip 21130 video BIOS conforms to the *VESA Super VGA BIOS Extension (VBE) Version 1.2*.

Identifying the Chip Revision

It is very important that the BIOS image matches the revision of the chip on the evaluation board. If the flash ROM is updated with the wrong BIOS, unpredictable results will occur.

The revision of the chip can be determined by looking for the number DC7538 on the chip itself. The last letter of the DC number indicates the chip revision. For example, DC7538C indicates Revision C of the DECchip 21130.

BIOS File Locations

The DECchip 21130 diagnostics and utilities diskette, which is provided as part of the DECchip 21130 PCI Integrated Graphics and Video Accelerator Evaluation Board (EB130) kit, includes the video BIOS in ROM image form. When the diagnostics are installed, the video BIOS flash ROM image is copied into the diagnostics directory (by default, C:\21130DIA).

The name of the file and its location are as follows:

Flash ROM image for DECchip 21130 Rev C: C:\21130DIA\BIOSREVC.BIN

If the date on this file is earlier than 6/9/95, please obtain the latest DECchip 21130 video BIOS.

This revision of the BIOS is suitable for use only on Revision C of the DECchip 21130.

Version 0.5 of the diagnostics installation program also copies the video BIOS for Revision B of the DECchip 21130 (the file name is BIOSREVB.BIN) into the diagnostics directory, but this revision of the chip is no longer supported by Digital.

Obtaining the Latest BIOS

As with all software for the DECchip 21130, the latest BIOS is also available from the Digital Semiconductor Bulletin Board System (BBS). Contact your Digital Semiconductor application engineer for more information.

When obtaining new revisions of the video BIOS, rename the previous revision to BIOSREVC.OLD and copy the new BIOS image into the diagnostics directory. By default, the diagnostic program looks for the flash ROM image in this directory.

Programming the DECchip 21130 Evaluation Board Flash ROM

The DECchip 21130 diagnostics include support for programming the flash ROM on the EB130. To program the flash ROM:

1. Install the DECchip 21130 diagnostics using the instructions included in the *DECchip 21130 PCI Integrated Graphics and Video Accelerator Evaluation Board User's Guide.*
2. Obtain the latest BIOS from the Digital Semiconductor BBS and place the appropriate file in the diagnostics directory (by default, C:\21130DIA).
3. From within Windows, start the 21130 diagnostics by clicking on the **Diagnostic Program** icon in the **21130 Diagnostics** program group.
4. Pull down the **Configure** menu, choose **Flash ROM**, then choose **Update Flash ROM**.
5. You will be presented with a dialog box asking for the name of the file to use. By default, you will be shown a directory listing of the directory where the diagnostics are installed. Choose the new BIOS file you copied in step 2 by double clicking on it.

The flash ROM on your EB130 will now be programmed with the new ROM image. This operation will take a few moments.

Source Code Licensing

Because the core code of the DECchip 21130 BIOS has been licensed by Digital from Phoenix Technologies, Ltd., source code access to the DECchip 21130 video BIOS requires a sublicense from Phoenix. Contact your Digital Semiconductor sales representative for more information.

Accelerated Mode Support

Because several registers required to initialize the DECchip 21130 in accelerated mode are accessible only using 32-bit addressing, they are not accessible to the BIOS code that runs in real mode. For this reason, initialization of accelerated modes must be performed by code that runs in protected mode.

Protected mode drivers supplied by Digital (for example, the Windows 3.1 display driver) include the appropriate initialization code. If you need the sources to this initialization code (which is written in Intel assembler) for your particular application, please contact your Digital Semiconductor sales representative.

Technical Support and Ordering Information

Technical Support

If you need technical support or help deciding which documentation best meets your needs, call the Digital Semiconductor Information Line at **1–800–332–2717.**

Ordering Associated Digital Semiconductor Literature

The following table lists some of the available Digital Semiconductor literature. For a complete list, contact the Digital Semiconductor Information Line.

Title	Order Number
DECchip 21130 PCI Integrated Graphics and Video Accelerator Technical Reference Manual	EC–QD2QB–TE
DECchip 21130 PCI Integrated Graphics and Video Accelerator Evaluation Board User's Guide	EC–QHV0B–TE

Ordering Third-Party Literature

You can order the *VESA Super VGA BIOS Extension (VBE) Version 1.2* specification from:

VESA
2150 N. First Street, Suite 440
San Jose, CA 95131–2029
FAX: 1–408–435–8225