



VESA[®] Standard

VBE/DDC

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VESA BIOS Extensions / Display Data Channel, (VBE/DDC) Standard

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Purpose

To establish a standard set of hardware independent system services for reading the Display Identity via the Display Data Channel, DDC.

Summary

The VBE/DDC standard defines a set of functions to retrieve the EDID and VDIF data structures from the display over the Display Data Channel. These functions supplement the VESA Video Bios Extensions (VBE) normally provided in ROM with the display controller and accessed through interrupt 10h.

The hardware mechanism and the identity information content that can be retrieved from the display devices is defined by the VESA Display Data Channel (DDC) standard.

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Support for this Specification

If you have a product which incorporates VBE/DDC you should ask the company that manufactured your product for assistance. If you are a manufacturer of the product, VESA can assist you with any clarification you may require. All questions must be in writing to VESA, in order of preference by:

America On-line: KEYWORD: VESA. Post your question on the VESA Message Board FAX:
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VBE/DDC STANDARD VERSION 1.0

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1. Introduction

This document contains a specification for an application interface, VBE/DDC. The VBE/DDC interface will allow operating system SW as well as application software to retrieve the display identity information from the display device without specific hardware knowledge or direct hardware access. The hardware protocol for retrieving the identity from the display is described in the VESA standard DDC 1.0.

Readers of this document should already be familiar with the VESA Video BIOS extensions and programming video hardware at BIOS level. The VESA Video BIOS extensions are defined by the VESA VBE Specification available from the VESA office.

2. Goals and Objectives

The VESA Display BIOS Extensions / Display Data Channel, VBE/DDC, provides a HW independent means for operating system and configuration utility SW to retrieve identity and capabilities information from the attached display.

The VBE/DDC services need to be provided as part of the Video BIOS ROM since the functions need to be used during system boot up.

The VBE/DDC services can be implemented with a standard VGA BIOS, and do not require the support of other VESA VBE Video BIOS services.

3. Display Identification BIOS Extensions, VBE/DDC

The new BIOS calls have been defined to map in to both a standard VGA BIOS as well as all implementations of a VESA VBE BIOS. For compatibility with these environments the VBE/DDC function calls are grouped under the VBE function number **4Fh**, sub-function **15h**. The number **4F15h** is passed in the AX register to the *int 10h* interrupt handler.

3.1 Status information

Every function returns status information in the AX register. The format of the status word is as follows:

AL ==4Fh:Function is supported

AL !=4Fh:Function is not supported

AH ==00h:Function call successful

AH ==01h:Function call failed

Software should treat a non-zero value in the AH register as a general failure condition. In later versions of VBE or VBE/DDC new error codes might be defined. Refer to the VBE Standard documentation.

3.2 VBE Sub-function 15h - Display Identification Extensions

The VESA VBE sub-function 15h is used to implement the VBE/DDC services. The VBE/DDC services are defined below and are not included in the VBE Standard documentation.

3.2.100 - Report VBE/DDC Capabilities

Input:

AH= 4fh	VESA Extension
AL= 15h	VBE/DDC Services
BL = 00h	Report DDC Capabilities
CX = 00h	Controller unit number (00 = primary controller)
ES:DI	Null pointer, must be 0:0 in version 1.0 Reserved for future use.

Output:

AX=	Status
BH=	Approx. time in seconds, rounded up, to transfer one EDID block (128 bytes).
BL =	DDC level supported (*)
bit 0	= 0 DDC1 not supported = 1 DDC1 supported
bit 1	= 0 DDC2 not supported = 1 DDC2 supported
bit 2	= 0 Screen not blanked during data transfer (**) = 1 Screen blanked during data transfer
CX =	Unchanged
ES:DI	Unchanged
All other registers may be destroyed	

(*) DDC level supported by both the display and the controller.

(**) This refers to the behavior of the controller and the VBE/DDC SW

3.2.201 - Read EDID

Input:	AH= 4fh	VESA Extension
	AL= 15h	VBE/DDC Services
	BL = 01h	Read EDID
	CX = 00h	Controller unit number (00 = primary controller)
	DX = 00h	EDID block number. Zero is only valid value in version 1.0
	ES:DI=	Pointer to area in which the EDID block (128 bytes) shall be returned

Output:	AX=	Status (*)
	BH=	Unchanged
	CX =	Unchanged
	ES:DI=	Pointer to area in which the EDID block is returned

All other registers may be destroyed

3.2.302 - Read VDIF block

Input:	AH= 4fh	VESA Extension
	AL= 15h	VBE/DDC Services
	BL = 02h	Read VDIF block
	CX = 00h	Controller unit number (00 = primary controller)
	DX =	VDIF block number (64 byte block)
	ES:DI=	Pointer to area in which the VDIF block shall be returned

Output:	AX=	Status
	BX=	Unchanged
	CX =	Unchanged
	ES:DI=	Pointer to area containing the VDIF block (64 byte)

All other registers may be destroyed