E-EDID™ Standard

VESA

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VESA ENHANCED EXTENDED DISPLAY IDENTIFICATION DATA STANDARD

Release A, Revision 1
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Purpose

This standard defines data formats to carry configuration information, allowing optimum use of displays.

Summary

This document describes the basic 128-byte data structure "EDID 1.3", as well as the overall layout of the data blocks that make up Enhanced EDID. The EDID 1.3 data structure is intended to be backward compatible with EDID data structures 1.0, 1.1 and 1.2 as implemented in all commercially available monitors. EDID data structure 1.3 contains enhancements to enable the Dual GTF curve concept. Use of EDID extensions described in this document assumes that the addressing method described in the Enhanced DDC standard is used.

Note

This issue of the EDID document contains specifications for the mandatory core elements of Enhanced EDID. Optional EDID extensions are defined in separate documents.

Preface

Intellectual Property

Trademarks

Patents

VESA proposals and standards are adopted by the Video Electronics Standards Association without regard as to whether their adoption may involve any patents or articles, materials, or processes. Such adoption does not assume any liability to any patent owner, nor does it assume any obligation whatsoever to parties adopting the proposals or standards documents.

Support for this Standard

Clarifications and application notes to support this standard may be written. To obtain the latest standard and any support documentation, contact VESA.

If you have a product, which incorporates EDID, you should ask the company that manufactured your product for assistance. If you are a manufacturer, VESA can assist you with any clarification you may require. All comments or reported errors should be submitted in writing to VESA using one of the following methods.

- Fax: 408-957 9270, *direct this note to Technical Support at VESA*
- e-mail: support@vesa.org
- mail: Technical Support
  Video Electronics Standards Association
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Revision History

Release A September 2, 1999

Initial release of the standard. The body of the standard is derived from the Extended Display Identification Standard Version 3.0

Release A Revision 1 February 9, 2000

Consolidate requirements of detailed timing section in section 3.10
Section 3.4 - removed restriction of 00h, 00h, 00h, 00h value for serial number field
Table 3.11 - added note to reference preferred timing mode bit requirements
Table 3.15 - added note for 1:1 aspect ratio in earlier EDID definitions
Table 3.16 – corrected order of bits in Vertical Sync format description
Table 3.17 - added definition for stereo flag bits values of 0,0,x
Table 3.20 - added clarification to round up Max pixel; clock value

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Table of Contents

1. OVERVIEW

1.1 Summary

The Extended Display Identification Data (EDID) described in this document, is a data structure, with optional variants, to allow the display to inform the host about its identity and capabilities. The EDID data structure is independent of the communication protocol used between the monitor and host.

Enhanced EDID defines a basic data structure of 128 bytes that all compliant monitors must supply, as well as the rules for how extensions can be added to the basic structure.

Enhanced EDID family of documents:

1 Enhanced EDID Standard (Basic 128-byte data structure. Rules for how EDID extensions are mapped.)
2 Optional EDID Extension Standards (Data structure for additional data contained in EDID extensions.)
2.1 EDID Structure 2 Extension
2.2 Flat Panel Timings Extension
2.3 Color transfer function Extension
2.4 …future extension structures not yet defined

1.2 Background

Enhanced EDID was created to clarify how EDID Extensions shall be used in order to handle identification of future monitor capabilities, while maintaining a basic level of compatibility that can be used to uniquely identify the monitor. Enhanced EDID is intended to supersede all previous versions of EDID.

1.3 Standard Objectives

The EDID Standard was developed by VESA to meet, exceed and/or complement certain criteria. These criteria are set forth as Standard Objectives as follows:

- Support Microsoft® Plug and Play definition
- Provide information in a compact format to allow the graphics subsystem to be configured based on the capabilities of the attached display

1.4 Reference Documents

Note: Versions identified here are current, but users of this standard are advised to ensure they have the latest versions of referenced standards and documents.

- VESA Enhanced Display Data Channel Standard - E-DDC, Version 1, September 2, 1999
- VESA Plug & Display Standard - P&D, Version 1, June 11, 1997
- VESA Video BIOS Extensions for Display Data Channel Standard - VBE/DDC, Version 1.1, Nov. 18, 1999
- VESA Video Image Area Definition Standard - VIAD, Revision 1.0, August 12, 1993
- VESA Generalized Timing Formula Standard - GTF, Version 1.0, December 18, 1996
- Microsoft/Intel Plug and Play ISA Specification, Version 1.0, May 28, 1993.
- Microsoft/Intel Plug and Play Errata and Clarification Document, December 10, 1993.
- IBM Personal System/2 Hardware Interface Technical Reference - Common Interfaces Video Subsystem

2. DATA FORMATS

2.1 Description of present and earlier EDID data formats

2.1.1 EDID 1.0

EDID structure 1.0 was the original 128-byte data format introduced in the DDC Standard Version 1.0 Revision 0 issued in August 1994. EDID 1.0 shall not be used in new monitor designs released after January 1, 2000.

2.1.2 EDID 1.1

EDID structure 1.1 added definitions for monitor descriptors as an alternate use of the space originally reserved for detailed timings, as well as definitions for previously unused fields. Structure 1.1 was introduced in the EDID Standard Version 2 Revision 0 issued in April 1996. EDID 1.1 shall not be used in new monitor designs released after January 1, 2000.

2.1.3 EDID 1.2

EDID structure 1.2 added definitions to existing data fields. Structure 1.2 was introduced in EDID Standard Version 3. EDID 1.2 is not recommended in new monitor designs released after January 1, 2000.

2.1.4 EDID 1.3

EDID structure 1.3 is introduced for the first time in this document and adds definitions for secondary GTF curve coefficients. EDID 1.3 is based on the same core as all other EDID 1.x structures. EDID 1.3 is intended to be the new baseline for EDID data structures. EDID 1.3 is recommended for all new monitor designs.

Structure 1.3 is a super set of structure 1.2. The main difference between the two is that 1.3 allows the Monitor Range Limits descriptor to define coefficients for a secondary GTF curve, and mandates a certain set of monitor descriptors.

2.1.5 EDID 2.0

Version 2 Revision 0 data structure defined a completely new EDID data structure based on 256-byte records. This structure was designed to provide additional information that is required for displays that follow the original VESA Plug & Display (P&D) and Flat Panel Display Interface-2 (FPDI-2) Standards.

NOTE! In the future, EDID structure 2.0 will be treated as an allowed, but not mandatory, EDID extension under Enhanced EDID.

2.2 Enhanced EDID

E-EDID is based on EDID structure 1.3 and allows additional data stored as EDID Extensions. In the minimum configuration, E-EDID consists of one data structure--EDID structure 1.3

Compatibility with monitors and systems that require EDID structure 2 is achieved by allowing EDID structure 2 to be included in E-EDID as two extensions residing at fixed locations.

2.2.1 Enhanced EDID High Level Layout

2.2.1.1 Mandatory elements

Block 0 is the only mandatory block.
This table shows the required use of E-EDID blocks.
All blocks are 128 bytes in length.

Each extension block is structured according to Section 2.2.1.3.
All extension blocks must be sequential, no holes allowed

Block #	**Block Description**
0	EDID 1.3 (or higher)
1	Extension if only 1 extension, otherwise EDID Block map (blocks 2-127)
2	Extension
3	Extension
4	Extension
:	
N	Extension
:	
128	EDID Block map for blocks 129 – 254 if more than 128 blocks used
129	Extension
:	
N =< 254	Extension

Block number 1 is used for Extension data if there is only one extension, otherwise block 1 is used as a block map.

2.2.1.2 EDID Block Map Extension

Byte #	**Description**	
0	Tag for Block Map	
1	Extension Tag for data in block 2 or block 129	Unused blocks are listed as Extension Tag = 0
2	Extension Tag for data in block 3 or block 130	
N	Extension Tag for data in block N+1 or block N+128	
126	Extension Tag for data in block 127 or block 254	
127	Check sum for this block map	

Block Tag is a byte that identifies the content of the Extension Block. A partial list of defined Tags is listed in Section 2.2.1.4.

2.2.1.3 General Extension Format

Byte #	Description	
0	Extension Tag	
1	Revision number for this tag	One byte binary number. Revisions are backward compatible.
2-126	Extension data	
127	Checksum for this Extension Block	

2.2.1.4 EDID Extension Tags Assigned by VESA

VESA will maintain a list of assigned EDID Extension Tags used to identify VESA Standard EDID Extensions. For the most current list of EDID Extensions, see the VESA website.

Tag	Description
01h	LCD Timings
02h	Additional timing data type 2
20h	EDID 2.0 Extension
30h	Color information type 0
40h	DVI feature data
50h	Touch screen data
F0h	Block Map
FFh	Extension defined by monitor manufacturer.

Note: At the time of the publication of this document, several of these extensions were not yet been defined or written. Contact VESA administration for the latest list of published EDID Extensions.

3. Extended Display Identification Data (EDID) Structure Ver. 1 Rev. 3

3.1 EDID Format Overview

Address	No. bytes		Description	Format
00h	**8**	**Bytes**	**Header**	**See Section 3.3**
00h		1	00h	
01h		1	FFh	
02h		1	FFh	
03h		1	FFh	
04h		1	FFh	
05h		1	FFh	
06h		1	FFh	
07h		1	00h	
08h	**10**	**Bytes**	**Vendor / Product Identification**	**See Section 3.4**
08h		2	ID Manufacturer Name	EISA 3-character ID
0Ah		2	ID Product Code	Vendor assigned code
0Ch		4	ID Serial Number	32-bit serial number
10h		1	Week of Manufacture	Week number
11h		1	Year of Manufacture	Year
12h	**2**	**Bytes**	**EDID Structure Version / Revision**	**See Section 3.5**
12h		1	Version #	Binary
13h		1	Revision #	Binary
14h	**5**	**Bytes**	**Basic Display Parameters / Features**	**See Section 3.6**
14h		1	Video Input Definition	
15h		1	Max. Horizontal Image Size	cm.
16h		1	Max. Vertical Image Size	cm.
17h		1	Display Transfer Characteristic (Gamma)	Binary
18h		1	Feature Support	See Table 3.11
19h	**10**	**Bytes**	**Color Characteristics**	**See Section 3.7**
19h		1	Red/Green Low Bits	Rx1 Rx0 Ry1 Ry0 Gx1 Gx0 Gy1Gy0
1Ah		1	Blue/White Low Bits	Bx1 Bx0 By1 By0 Wx1 Wx0 Wy1 Wy0
1Bh		1	Red-x	Red-x Bits 9 - 2
1Ch		1	Red-y	Red-y Bits 9 - 2
1Dh		1	Green-x	Green-x Bits 9 - 2
1Eh		1	Green-y	Green-y Bits 9 - 2
1Fh		1	Blue-x	Blue-x Bits 9 - 2
20h		1	Blue-y	Blue-y Bits 9 - 2
21h		1	White-x	White-x Bits 9 - 2
22h		1	White-y	White-y Bits 9 - 2
23h	**3**	**Bytes**	**Established Timings**	**See Section 3.8**
23h		1	Established Timings 1	
24h		1	Established Timings 2	
25h		1	Manufacturer's Reserved Timings	
26h	**16**	**Bytes**	**Standard Timing Identification**	**See Section 3.9**
26h		2	Standard Timing Identification # 1	
28h		2	Standard Timing Identification # 2	
2Ah		2	Standard Timing Identification # 3	
2Ch		2	Standard Timing Identification # 4	
2Eh		2	Standard Timing Identification # 5	
30h		2	Standard Timing Identification # 6	
32h		2	Standard Timing Identification # 7	

Address	No. bytes		Description	Format
34h		2	Standard Timing Identification # 8	
36h	**72**	**Bytes**	**Detailed Timing Descriptions**	**See Section 3.10**
36h		18	Detailed Timing Description # 1	EDID structure Version 1, Revisions 1 and 2, allowed this space to be used for Monitor Descriptors. Host SW using this data should be prepared to detect Monitor Descriptors also in this location even though displays conforming with later revisions of EDID structure only use this space for Detailed Timing Description.
48h		18	Detailed Timing Description # 2 or Monitor Descriptor	
5Ah		18	Detailed Timing Description # 3 or Monitor Descriptor	
6Ch		18	Detailed Timing Description # 4 or Monitor Descriptor	
7Eh	**1**	**Byte**	**Extension Flag**	**Number of (optional) 128-byte EDID extension blocks to follow.**
7Fh	**1**	**Byte**	**Checksum**	**The 1-byte sum of all 128 bytes in this EDID block shall equal zero**

Table 3.1 - EDID Structure Version 1

The following sections provide details on each byte of the EDID Version 1 data structure.

3.2 Data Format Conventions

The EDID data structures are designed to be compact in their representation of data in order to fit the most information into a limited space. To accommodate this, many data lengths have been used according to the needs of the particular data. These include fields from a single bit up to two bytes in length. In all cases, except where explicitly stated, the following conventions are used:

Data length	**Convention used**	**Example**
1 to 7 bits	stored in order stated	
8 bits (1 byte)	stored at location stated	
9 to 15 bits	location of bits stated in field definition	
16 bits (2 bytes)	Bytes are a binary format (not BCD) stored in locations specified with least significant byte (LSB) stored in first location.	1280 decimal = 0500h Stored 00 at first location 50 next location
Character string (More than 2 bytes)	Bytes are ASCII, stored in order they appear in the string.	"ACED" Stored 41h at first location, 43h at the next location, 45h at the next location and 44h at the next location.

Table 3.2 - Data Format Conventions

3.3 Header: 8 bytes

The header is an 8-byte pattern designed to be easily recognizable from other bytes in the data structure. Its format is shown in Table 3.3.

8	Bytes	Header
	1	00h
	1	FFh
	1	FFh
	1	FFh
	1	FFh
	1	FFh
	1	FFh
	1	00h

Table 3.3 - EDID Header

3.4 Vendor/Product ID: 10 bytes

The Vendor/Product ID block is made up of several fields used to uniquely identify the monitor. The size and order of the fields is shown in the table below.

10	Bytes	Vendor / Product Identification
	2	ID Manufacturer Name
	2	ID Product Code
	4	ID Serial Number
	1	Week of Manufacture
	1	Year of Manufacture

Table 3.4 - Vendor/Product ID

The ID Manufacturer Name field, shown in Table 3.5, contains a 2-byte representation of the monitor's manufacturer. This is the same as the EISA ID. It is based on compressed ASCII, “0001=A” ... “11010=Z”.

EISA manufacturer IDs are issued by Microsoft. Contact by:

E-mail: pnpid@microsoft.com
Fax: 425-936-7329, Attention PNPID in Building 27.

Description	Byte	Bit							
		7	**6**	**5**	**4**	**3**	**2**	**1**	**0**
ID Manufacturer Name	1	0)	(4	3	2	1	0)	(4	3
		*	Character 1					Char 2	
	2	2	1	0)	(4	3	2	1	0)
		Character 2			Character 3				

Table 3.5 - ID Manufacturer Name

The ID Product code field contains a 2-byte vendor assigned product code. This is used to differentiate between different models from the same manufacturer. If this field is used to represent a model number, then the number is stored in hex with the least significant byte first.

The ID serial number is a 32-bit serial number used to differentiate between individual instances of the same model of monitor. Its use is optional. When used, the bit order for this field follows that shown in Table 3.6. The EDID structure Version 1 Revision 1 and later offer a way to represent the serial number of the monitor as an ASCII string in a separate descriptor block.

Description	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
ID Serial Number	1	(7	6	5	4	3	2	1	0)
	2	(15	14	13	12	11	10	9	8)
	3	(23	22	21	20	19	18	17	16)
	4	(31	30	29	28	27	26	25	24)

Table 3.6 - ID Serial Number

The Week of Manufacture field, if used, is set to a value in the range of 1-53. If this field is not used, the value should be set to 0.

The Year of Manufacture field is used to represent the year of the monitor's manufacture. The value that is stored is an offset from the year 1990 as derived from the following equation:

Value stored = (Year of manufacture - 1990)

Example: For a monitor manufactured in 1997 the value stored in this field would be 7.

3.5 EDID Structure Version / Revision: 2 bytes

2	Bytes	EDID Structure Version, Revision	
	1	Version no.	Binary
	1	Revision no.	Binary

Table 3.7 - EDID Structure Version and Revision

The appropriate version and revision numbers shall be stored here. These values define the EDID structure being used. Products compliant with this document shall have Version = 1 and Revision = 3.

3.6 Basic Display Parameters and Features: 5 bytes

5	Bytes	Basic Display Parameters/Features	
	1	Video Input Definition	See Table 3.9
	1	Max. Horizontal Image Size	cm.
	1	Max. Vertical Image Size	cm.
	1	Display Transfer Characteristic (Gamma)	(gamma x 100)-100, [range 1.00 $\rightarrow$ 3.54] If set to FFh, the gamma value is not defined here.
	1	Feature Support (DPMS)	See Table 3.11

Table 3.8 - Basic Display Parameters and Features

The Video Input Definition field provides information describing how the host's video outputs should be configured to drive the attached display. The format of this one-byte field is described below in Table 3.9

Bit	Description	Detailed Description
7	Analog/Digital Signal Level	Defines usage of the rest of byte as "analog" or "digital" input. Analog = 0, Digital = 1.
If bit 7 = 0 use the following definitions for bit 6-0		
6	Signal Level Standard [6:5]	Refer to following definitions. Format is 'reference white above blank', 'level of sync. tip below blank'. (volts) Bit 6 Bit 5 Operation 0 0 0.700, 0.300 (1.000 V p-p) 0 1 0.714, 0.286 (1.000 V p-p) 1 0 1.000, 0.400 (1.400 V p-p) 1 1 0.700, 0.000 (0.700 V p-p) See EVC Std.
5	Signal Level Standard [6:5]	See above entry for definition
4	Setup	If set = 1, the display expects a blank-to-black setup or pedestal per appropriate Signal Level Standard
3	Sync. Inputs Supported [3]	If set = 1, separate syncs. supported
2	Sync. Inputs Supported [2]	If set = 1, composite sync. (on Hsync line) supported
1	Sync. Inputs Supported [1]	If set = 1, sync. on green video supported
0	Sync. Inputs Supported [0]	If set = 1, serration of the Vsync. Pulse is required when composite sync. or sync-on-green video is used
If bit 7 = 1 use the following definitions for bit 6-0		
6-1	Reserved	Set all reserved bits to 0
0	DFP 1.x	If set = 1, Interface is signal compatible with VESA DFP 1.x TMDS CRGB, 1 pixel / clock, up to 8 bits / color MSB aligned, DE active high

Table 3.9 - Video Input Definition

The Maximum Image Size parameters provide information on the maximum image dimensions that can be correctly displayed, as defined by VESA Video Image Area Definition (VIAD) Standard, rounded to the nearest centimeter (cm). These values are intended to be the maximum image size that can be properly displayed over the entire set of supported timing/format combinations. The host system is expected to use this data to get a rough idea of the image size and aspect ratio to allow properly scaled text to be selected.

If either or both bytes are set to zero, then the system shall make no assumptions regarding the display size.
e.g. A projection display may be of indeterminate size.

2	Bytes	Description	Format
	1	Max. Horizontal Image Size	From 1 → 255 cm See above for special case = 0
	1	Max. Vertical Image size	From 1 → 255 cm See above for special case = 0

Table 3.10 - Maximum Image Size

The display transfer characteristic, referred to as gamma, is stored in a 1-byte field capable of representing gamma values in the range of 1.00 to 3.54. The integer value stored is determined by the formula: Value stored = (gamma x 100)-100

For example, a gamma value of 2.2 would be represented as 120.

The feature support field is used to indicate support for various display features. The format of this 1-byte field is shown in following table.

1	Byte	Bits	Feature Support	Description
	1	7	Standby	Refer to VESA DPMS Specification
		6	Suspend	Refer to VESA DPMS Specification
		5	Active Off/Very Low Power	The display consumes much less power when it receives a timing signal that is outside its declared active operating range. The display will revert to normal operation if the timing signal returns to the normal operating range. No sync. signals is one example of a timing signal outside normal operating range. No DE signal is another example.
		4-3	Display Type [4:3]	<u>Bit 4 Bit 3 Interpretation</u> 0 0 Monochrome / grayscale display 0 1 RGB color display 1 0 Non-RGB multicolor display e.g. R/G/Y 1 1 Undefined
		2	Standard Default Color Space, sRGB	If this bit is set to 1, the display uses the sRGB standard default color space as its primary color space. If this bit is set, the color information in section 3.7 must match the sRGB standard values. (See example in Appendix A)
		1	Preferred Timing Mode	If this bit is set to 1, the display's preferred timing mode is indicated in the first detailed timing block. **Note:** Use of preferred timing mode is required by EDID Structure Version 1 Revision 3 and higher.
		0	Default GTF supported	If this bit is set to 1, the display supports timings based on the GTF standard using default GTF parameter values.

Table 3.11 - Feature Support

3.7 Phosphor or Filter Chromaticity: 10 bytes

These bytes provide colorimetry and white point information. The data is stored in the order shown in Table 3.12.

The white point value shall be the default white point (the white point set at power on or on a reset of the display to its default setting). Provision for multiple white points is made in one of the monitor descriptors - see Section 3.10.3.

10	Bytes	Color Characteristic	Based on CIE publication 15.2 on colorimetry space
	1	Red / Green Low Bits	Rx1 Rx0 Ry1 Ry0 Gx1 Gx0 Gy1 Gy0
	1	Blue / White Low Bits	Bx1 Bx0 By1 By0 Wx1 Wx0 Wy1 Wy0
	1	Red_x	Red_x bits 9 → 2
	1	Red_y	Red_y bits 9 → 2
	1	Green_x	Green_x bits 9 → 2
	1	Green_y	Green_y bits 9 → 2
	1	Blue_x	Blue_x bits 9 → 2
	1	Blue_y	Blue_y bits 9 → 2
	1	White_x	White_x bits 9 → 2
	1	White_y	White_y bits 9 → 2

Table 3.12 - Chromaticity and Default White Point

The chromaticity and white point values are expressed as fractional numbers, accurate to the thousandth place. Each number is represented by a binary fraction, which is 10 bits in length. In this fraction a value of one for the bit immediately right of the decimal point (bit 9) represents 2 raised to the -1 power. A value to 1 in the right most bit (bit 0) represents a value of 2 raised to the -10 power.

The high order bits (9 → 2) are stored as a single byte. The low order bits (1 → 0) are paired with other low order bits to form a byte. With this representation, all values should be accurate to +/- 0.0005 of the actual value. Examples are shown in Table 3.13.

Actual Value	Binary value	Converted Back to Decimal
0.610	1001110001	0.6103516
0.307	0100111010	0.3066406
0.150	0010011010	0.1503906

Table 3.13 - Ten bit Binary Fraction Representation

3.8 Established Timings: 3 bytes

The established timing block is a field of one-bit flags, which are used to indicate support for established VESA and other common timings in a very compact form. Other standardized timings can be described in the Standard Timings block defined in Section 3.9. Any timing can be described using the Detailed Timings block defined in Section 3.10.

Bits 6 → 0 (inclusive) of byte 3 are used to define manufacturer's proprietary timings, and may be used if a manufacturer wants to identify such timings through the use of one-bit flags. VESA takes no responsibility for coordinating or documenting the use of these bits by any manufacturer(s).

A bit set to "1" indicates support for that timing.

3.8.1 EDID Established Timings Section

Indicates Factory Supported Modes of VESA Discrete Monitor Timings (DMTs that predated EDID) as well as other industry de-facto timings that predate EDID. The one-bit flags of the Established Timing block can not be used to determine maximum format support, maximum refresh support, or any other timing parameter of the display. Also, if any one-bit flag is not set in the Established Timing block, this data can not be used to determine if that timing is within the supported scanning frequency of the display - only that it is not a Factory Supported Mode.

***Factory Supported Modes* are defined as modes that are properly sized and centered as the monitor is delivered from factory.**

All Factory Supported Modes are not necessarily listed in any EDID timing section.

3	Bytes	Bit	Description	Source
	1		**Established Timing I**	

		7	720 x 400 @ 70Hz	IBM, VGA
		6	720 x 400 @ 88Hz	IBM, XGA2
		5	640 x 480 @ 60Hz	IBM, VGA
		4	640 x 480 @ 67Hz	Apple, Mac II
		3	640 x 480 @ 72Hz	VESA
		2	640 x 480 @ 75Hz	VESA
		1	800 x 600 @ 56Hz	VESA
		0	800 x 600 @ 60Hz	VESA
	1		**Established Timing II**	
		7	800 x 600 @ 72Hz	VESA
		6	800 x 600 @ 75Hz	VESA
		5	832 x 624 @ 75Hz	Apple, Mac II
		4	1024 x 768 @ 87Hz(I)	IBM
		3	1024 x 768 @ 60Hz	VESA
		2	1024 x 768 @ 70Hz	VESA
		1	1024 x 768 @ 75Hz	VESA
		0	1280 x 1024 @ 75Hz	VESA
	1		**Manufacturer's Timings**	
		7	1152 x 870 @ 75Hz	Apple, Mac II
		6-0	Reserved	

Table 3.14 - Established Timings

3.9 Standard Timing Identification

The next 16 bytes provide identification for up to eight additional timings, each identified by a unique 2-byte code derived from the mode format and refresh rate as described below. This scheme is used to identify future standard timings not included in the Established Timings section (see Section 3.8). Standard Timing identifiers that don't correspond to a VESA Discrete Monitor Timing Mode are referring to a mode calculated using the VESA GTF with default coefficients. The scheme may also be used in monitors intended to be used exclusively with proprietary systems where the host already has the complete timing information. Additional standard timings may be listed by using one of the alternate definitions of the detailed Timing Descriptions permitted in EDID Structure Version 1, Revision 1 and higher - see Section 3.10.3.

Note: The 2-byte identifier codes for VESA standard timing modes are defined as part of each VESA Timing Standard.

Unused fields in this section shall be set to 01h, 01h.

3.9.1 EDID Standard Timings Section

The Standard Timings section is used to identify Factory Supported Modes that fall into one or both of two categories:

1. VESA Discrete Monitor Timings (listed in the VESA DMT Standards document) not included in the current Established Timing section.
2. Discrete timing modes calculated using GTF.

A 2-byte timing identifier identifies each timing mode. If a timing identifier listed corresponds to an issued VESA Discrete Monitor Timing, factory adjustment data must be stored (preset) in the display. If a timing identifier listed does not match a VESA DMT identifier, it shall refer to a timing calculated using the Generalized Timing Formula (GTF.)

***Factory Supported Modes* are defined as modes that are properly sized and centered as the monitor is delivered from the factory.**

All Factory Supported Modes are not necessarily listed in any EDID timing section.

16	Byte	Bit	Description	Source
2			**Standard Timing Identification 1**	**Comment**
	1		**(Horizontal active pixels / 8) - 31**	The range of horizontal active pixels that can be described in each byte is 256 → 2288 pixels, in increments of 8 pixels.
	1	**7,6**	**Image Aspect ratio** <u>Bit 7 Bit 6 Operation</u> 0 0 16:10 Aspect ratio 0 1 4:3 Aspect ratio 1 0 5:4 Aspect ratio 1 1 16:9 Aspect ratio	The vertical active line count may be calculated from the aspect ratio and the Horizontal active pixel count given in the first byte. “Square” pixels (1:1 pixel aspect ratio) shall be assumed. **Note:** EDID structures prior to Version 1 Revision 3 defined the bit combination of 0 0 to indicate a 1:1 aspect ratio
		5→0	Refresh Rate (Hz) – 60	Range 60 → 123Hz
2			**Standard Timing Identification 2**	See above definition for Standard Timing 1
2			**Standard Timing Identification 3**	See above definition for Standard Timing 1
2			**Standard Timing Identification 4**	See above definition for Standard Timing 1
2			**Standard Timing Identification 5**	See above definition for Standard Timing 1
2			**Standard Timing Identification 6**	See above definition for Standard Timing 1
2			**Standard Timing Identification 7**	See above definition for Standard Timing 1
2			**Standard Timing Identification 8**	See above definition for Standard Timing 1

Table 3.15 - Standard Timings

3.10 Detailed Timing Section - 72 bytes

The detailed timing section is divided into four descriptor blocks, which are 18 bytes each. These descriptor blocks contain either timing data as described in section 3.10.2 or other types of data as described in section 3.10.3. Use of the detailed timing section shall meet the following requirements.

1) All blocks shall be filled with valid data using the formats described in sections 3.10.2 and 3.10.3. Use of a data fill pattern is not permitted.
2) Timing data must represent a supported mode of the display.
3) Descriptor blocks shall be ordered such that all detailed timing blocks precede other types of descriptor blocks
4) The first descriptor block shall be used to indicate the display's preferred timing mode. This is described in section 3.10.1
5) A Monitor Range Limits Descriptor must be provided
6) A Monitor Name Descriptor must be provided

Example A: Preferred Detailed Timing, Detailed Timing 2, Monitor Name, Monitor Range Limits.

Example B: Preferred Detailed Timing, Monitor Serial Number, Monitor Range Limits, Monitor Name.

Note: Items 4, 5 and 6 above were permitted but not required prior to EDID structure version 1 revision 3. Hosts may encounter displays using EDID version 1 revision 0-2 which do not meet all of these requirements.

3.10.1 First Detailed Timing Descriptor Block

The first Detailed Timing shall only be used to indicate the mode that the monitor vendor has determined will give an optimal image. For LCD monitors, this will in most cases be the panel "native timing" and “native resolution”. Use of the EDID Preferred Timing bit shall be used to indicate that the timing indeed conforms to this definition.

3.10.2 Detailed Timing Descriptor - 18 bytes

18	Bytes	Detailed Timing Descriptions	Format
	2	Pixel clock / 10,000	Stored LSB first Example : 135MHz would be 13500 decimal, stored as BCh, 34h
	1	Horizontal Active	Pixels, lower 8 bits
	1	Horizontal Blanking	Pixels, lower 8 bits
	1	Horizontal Active : Horizontal Blanking	Upper nibble : upper 4 bits of Horizontal Active Lower nibble : upper 4 bits of Horizontal Blanking
	1	Vertical Active	Lines, lower 8 bits
	1	Vertical Blanking	Lines, lower 8 bits
	1	Vertical Active : Vertical Blanking	Upper nibble : upper 4 bits of Vertical Active Lower nibble : upper 4 bits of Vertical Blanking
	1	Horizontal Sync. Offset	Pixels , from blanking starts, lower 8 bits
	1	Horizontal Sync Pulse Width	Pixels, lower 8 bits
	1	Vertical Sync Offset : Vertical Sync Pulse Width	Upper nibble : lines, lower 4 bits of Vertical Sync Offset Lower nibble : lines, lower 4 bits of Vertical Sync Pulse Width
	1	Horizontal Sync Offset Horizontal Sync Pulse Width Vertical Sync Offset Vertical Sync Pulse Width	bits 7,6 : upper 2 bits of Horizontal Sync Offset bits 5,4 : upper 2 bits of Horizontal Sync Pulse Width bits 3,2 : upper 2 bits of Vertical Sync Offset bits 1,0 : upper 2 bits of Vertical Sync Pulse Width
	1	Horizontal Image Size	mm, lower 8 bits
	1	Vertical Image Size	mm, lower 8 bits
	1	Horizontal & Vertical Image Size	Upper nibble : upper 4 bits of Horizontal Image Size Lower nibble : upper 4 bits of Vertical Image Size
	1	Horizontal Border	Pixels, see Section 3.12
	1	Vertical Border	Lines, see Section 3.12
	1	Flags	Interlace, Stereo, Horizontal polarity, Vertical polarity, Sync Configuration, etc. Bit 7 Function 0 Non-interlaced 1 Interlaced Bit 6 Bit 5 Function 0 0 Normal display, no stereo x x See Table 3.17 for definition Bit 4 Bit 3 Function 0 0 Analog composite 0 1 Bipolar analog composite 1 0 Digital composite 1 1 Digital separate Bit 2 Bit 1 Function The interpretation of bits 2 and 1 is dependent on the decode of bits 4 and 3 - see Table 3.18. Bit 0 See Table 3.17 for definition

Table 3.16 - Detailed Timing Description

Bit 6	Bit 5	Bit 0	Definition
0	0	x	Normal display, no stereo. The value of bit 0 is "don't care"
0	1	0	Field sequential stereo, right image when stereo sync. = 1
1	0	0	Field sequential stereo, left image when stereo sync. = 1
0	1	1	2-way interleaved stereo, right image on even lines
1	0	1	2-way interleaved stereo, left image on even lines
1	1	0	4-way interleaved stereo
1	1	1	Side-by-Side interleaved stereo

Table 3.17 - Decode of Stereo Mode Bits

The sync scheme for a detailed timing is described in bits 4-1 of the Flag byte. Bits 4 and 3 describe one of four schemes. Bits 2 and 1 give further details dependent on the values in bits 4 and 3. This is shown in Table 3.18.

Bits 4 and 3	Bit 2	Bit 2 Def.	Bit 1	Bit 1 Def.
0,0 Analog Composite	Serrate	If set, controller shall supply serration (Hsync during Vsync).	On RGB	If set, sync pulses should appear on all 3 video signal lines. If not set, sync on green video line only.
0,1 Bipolar Analog Composite	Serrate	If set, controller shall supply serration (Hsync during Vsync).	On RGB	If set, sync pulses should appear on all 3 video signal lines. If not set, sync on green video line only.
1,0 Digital Composite	Serrate	If set, controller shall supply serration (Hsync during Vsync).	Composite Polarity	This is the polarity of the Hsync pulses outside of Vsync. Polarity is positive if bit is set to 1
1,1 Digital Separate	Vertical Polarity	Vsync signal Polarity is Positive if bit is set to 1.	Horizontal Polarity	Hsync signal polarity is Positive if bit is set to 1.

Table 3.18 - Sync Signal Description

3.10.3 Monitor Descriptor Description - 18 bytes

The last three of the 18-byte Detailed Timing Description blocks may alternately be defined as Monitor Descriptor blocks using the general format shown in Table 3.19. Detailed descriptions of the data types are shown in Table 3.20. Those 18-byte blocks not used for Monitor Descriptors shall be used for detailed timings.

Notes regarding EDID Monitor Range Limits Descriptor
Use of this descriptor is mandatory.
Any timing outside these limits may cause the monitor to enter a self-protection mode. The host shall always verify that an intended timing falls within these limits before the timing is applied.

18	Bytes	Monitor Descriptor	Values
	2	Flag	Flag = 0000h when block used as descriptor
	1	Flag	Reserved = 00h when block used as descriptor
	1	Data Type Tag (Binary coded)	FFh: Monitor Serial Number - Stored as ASCII, code page # 437, ≤ 13 bytes. FEh: ASCII String - Stored as ASCII, code page # 437, ≤ 13 bytes. FDh: Monitor range limits, binary coded FCh: Monitor name, stored as ASCII, code page # 437 FBh: Descriptor contains additional color point data FAh: Descriptor contains additional Standard Timing Identifications F9h - 11h: Currently undefined 10h: Dummy descriptor, used to indicate that the descriptor space is unused 0Fh - 00h: Descriptor defined by manufacturer.
	1	Flag	00h when block used as descriptor
	13	Descriptor Data	Definition dependent on data type tag chosen. Tag definitions in Table 3.20

Table 3.19 - Monitor Descriptor Block Summary

Data Tag	Monitor Descriptor Data	Format
FFh	Monitor S/N (ASCII)	If < 13 bytes then terminate with ASCII code 0Ah and pad field with ASCII code 20h. Data shall be sequence such that 1st byte = 1st character etc.
FEh	ASCII Data String	If < 13 bytes then terminate with ASCII code 0Ah and pad field with ASCII code 20h. Data shall be sequence such that 1st byte = 1st character etc.
FDh	Monitor Range Limits	Byte 5 : Min. Vertical rate (for interlace this refers to field rate) Binary coded rate in Hz., integer only Byte 6: Max. Vertical rate (for interlace this refers to field rate) Binary coded rate in Hz., integer only Byte 7 : Min. Horizontal in kHz, integer only, binary coded Byte 8: Max. Horizontal in kHz, integer only, binary coded Byte 9: Max. Supported Pixel Clock (as defined by the display manufacturer) Binary coded clock rate in MHz / 10 e.g. 130MHz is 0Dh **Note:** Maximum Pixels Clock values that are not a multiple of 10MHz should be rounded up to a multiple of 10MHz e.g. 108MHz is 0Bh Secondary timing formula support Bytes 10 – 17 are used to indicate support for a secondary timing formula. Byte 10 00h = No secondary timing formula supported (Support for default GTF indicated in feature byte – Table 3.11) 02h = Secondary GTF curve supported All other values = Reserved for future timing formula definitions If Byte 10 = 00h No secondary timing formula supported, the following applies: Byte 11: Set = 0Ah. Byte 12-17: Set = 20h. If Byte 10 = 02h Secondary GTF supported, the following applies: The standard Generalized Timing Formula with modified C, M, K and J parameters is used for a secondary timing curve. For definition of these GTF parameters, see the VESA GTF standard. Byte 11: Reserved Set = 00h Byte 12 : Start frequency for secondary curve, Hor. freq./2 [kHz] Byte 13 : C*2 0=<C=<127 Byte 14 and 15 : M (LSB) 0=<M=<65535 Byte 16 : K 0=<K=<255 Byte 17 : J*2 0=<J=<127
FCh	Monitor Name (ASCII)	If < 13 bytes then terminate with ASCII code 0Ah and pad field with ASCII code 20h. **Note:** Intent of this field is to provide a meaningful name to the user

Data Tag	Monitor Descriptor Data	Format
FBh	Color Point	**Note:** Chromaticity data to be coded as Section 3.7 **Note:** Gamma data to be coded as Section 3.7 Byte 5 : White point index number (binary) Byte 6 : White low bits Byte 7 : White_x Byte 8 : White_y Byte 9 : White Gamma Byte 10 : White point index number (binary) Byte 11 : White low bits Byte 12 : White_x Byte 13 : White_y Byte 14 : White Gamma Byte 15 : Set = 0Ah Byte 16 - 17 : Set = 20h **Note:** An index number of 00h indicates that no color point data follows
FAh	Standard Timing Identifiers	**Note:** Data format as Section 3.9 Bytes 5 & 6 : Standard Timing Identification 9 Bytes 7 & 8 : Standard Timing Identification 10 Bytes 9 & 10 : Standard Timing Identification 11 Bytes 11 & 12 : Standard Timing Identification 12 Bytes 13 & 14 : Standard Timing Identification 13 Bytes 15 & 16 : Standard Timing Identification 14 Byte 17 : Set = 0Ah **Note:** It is permissible to redefine more than one detailed timing block as Standard Timing Identifiers.
00-0Fh	Manufacturer Specified	**Note:** Descriptors with data type tags in this range are defined by the monitor manufacturers and are not specified by VESA. Questions regarding interpretation should be directed to the monitor manufacturer. **Note:** EDID structure Version 1 Revision 1 reserved only tags 00h & 01h for manufacturer specific use.

Table 3.20 - Monitor Descriptor Details

3.11 Extension Flag and Checksum

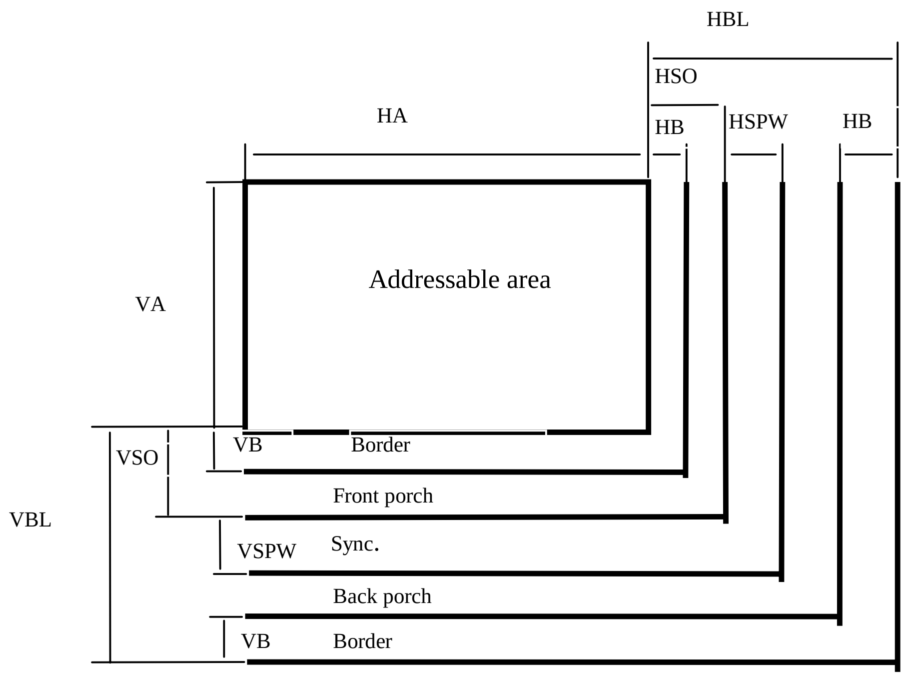
2	Bytes	Description	Function
	1	Extension Flag	Indicates the number of (optional) Extension EDID blocks to follow.
	1	Checksum	This byte should be programmed such that a one-byte checksum of the entire 128-byte EDID equals 00h.

Table 3.21 - Extension Flag and Checksum

3.12 Note Regarding Borders

This section is included to provide a frame of reference for the use of borders in detailed timings.

- Both the horizontal and vertical border sizes are for one side only. (i.e. the actual number of pixels or lines taken up by both borders is twice the listed value)
- Borders are assumed to be symmetric.
- Borders are not considered part of the active image time and do not affect the total line time, which should always be found by adding the active and blanking times for each axis.
- Borders may be part of the blanking time, but that portion that may be safely used to provide an illuminated solid-color border around the active image area.



VA	Vertical Active	HA	Horizontal Active
VBL	Vertical Blanking	HBL	Horizontal Blanking
VB	Vertical Border	HB	Horizontal Border
VSO	Vertical Sync. Offset	HSO	Horizontal Sync. Offset
VSPW	Vertical Sync. Pulse Width	HSPW	Horizontal Sync. Pulse Width

4. EDID Extensions

Extensions to the basic 128-byte EDID structure are defined in separate VESA Standard documents.

At the time of writing this document the following extensions are planned:

LCD Monitor Timing extension
Standard Timing extension
Color information
EDID Structure 2.0 as extension under E-EDID

5. Timing information priority order

The basic 128-byte EDID data structure contains four different types of timing information, Established, Standard, Preferred and Detailed timings.

The monitor should populate these data fields with the understanding that the host will evaluate and support the timing modes in the following priority order:

PRIORITY	**If GTF supported as indicated by any GTF flag in EDID**	**If GTF not supported**
1	Preferred Detailed Timing	Preferred Detailed Timing
2	Other Detailed Timings if present	Other Detailed Timings if present
3	Standard Timings in order listed (first listed timing has highest priority)	Standard Timings in order listed (first listed timing has highest priority)
4	Any GTF timing that falls within the range limits of the monitor. All range limits parameters must be evaluated and verified to be within the limits.	Any Established Timing listed as supported
5	Any Established Timing listed as supported.	Any Default GTF mode that falls within the indicated monitor range limits. Image may not be perfectly centered.

HOSTS SHOULD NOT USE ANY OTHER TIMINGS UNLESS THEY HAVE POSITIVELY IDENTIFIED THE MONITOR AND HAVE PRIOR KNOWLEDGE ABOUT OTHER SUPPORTED MODES.

If additional timing information is contained in EDID extensions, the timing priority order should be according to the rules established in the VESA Standard describing the first listed EDID extension.

For example the LCD Timings extension may specify that the timings contained in the LCD Extension have higher priority than the timings listed in the basic EDID structure.

If there is an extension with Standard timings, the VESA Standard describing this extension may specify that the standard timings listed in the extension have priority immediately before the standard timings in the basic EDID structure. Otherwise, the priority order is the one specified in this document.

6. APPENDIX A - Sample EDID

6.1 EXAMPLE 1. Enhanced EDID sample with sRGB and Secondary GTF

BYTE HEX	FUNCTION	Value HEX	BIN	DEC	ASCII	Notes
0	Header	00	00000000	0		
1		FF	11111111	255		
2		FF	11111111	255		
3		FF	11111111	255		
4		FF	11111111	255		
5		FF	11111111	255		
6		FF	11111111	255		
7		00	00000000	0		
8	EISA Manuf. Code LSB	10	00010000	16		DELL EISA ID
9	Compressed ASCII	AC	10101100	172		
0A	Product code	AB	10101011	171		DELL Product code
0B	hex, LSB first	50	01010000	80		
0C	32-bit ser #	00	00000000	0		
0D		00	00000000	0		
0E		00	00000000	0		
0F		00	00000000	0		
10	Week of manufacture	2A	00101010	42		
11	Year of manufacture	09	00001001	9		
12	EDID Structure Ver.	01	00000001	1		
13	EDID revision #	03	00000011	3		
14	Video input definition	0E	00001110	14		
15	Max H image size	26	00100110	38		38 cm
16	Max V image size	1D	00011101	29		29cm
17	Display Gamma	96	10010110	150		Gamma 2.5
18	Feature support	EF	11101111	239		Stand-by, Suspend, Active Off RGB Color sRGB supported Preferred Timing Default GTF supported
19	Red/green low bits	EE	11101110	238		
1A	Blue/white low bits	91	10010001	145		
1B	Red x / high bits	A3	10100011	163		Red x 0.6400 = 10100001111
1C	Red y	54	01010100	84		Red y 0.3300 = 0101010010
1D	Green x	4C	01001100	76		Green x 0.3000 = 0100110011
1E	Green y	99	10011001	153		Green y 0.6000 = 1001100110
1F	Blue x	26	00100110	38		Blue x 0.1500 = 0010011010
20	Blue y	0F	00001111	15		Blue y 0.0600 = 0000111101
21	White x	50	01010000	80		White x 0.3127 = 0101000000
22	White y	54	01010100	84		White y 0.3290 = 0101010001
23	Established timing I	A5	10100101	165		720x400 @70Hz 640x480 @60Hz

BYTE HEX	FUNCTION	Value HEX	BIN	DEC	ASCII	Notes
24	Established timing II	43	01000011	67		640x480 @75Hz 800x600 @60Hz 800x600 @75Hz 1024x768 @75Hz 1280x1024 @75Hz
25	Established timing III	00	00000000	0		
26	Standard timing # 1	A9	10101001	169		1600x1200 @75Hz
27		4F	01001111	79		
28	Standard timing # 2	A9	10101001	169		1600x200 @85Hz
29		59	01011001	89		
2A	Standard timing # 3	71	01110001	113		1152x864 @85Hz
2B		59	01011001	89		
2C	Standard timing # 4	61	01100001	97		1024x768 @85Hz
2D		59	01011001	89		
2E	Standard timing # 5	45	01000101	69		800x600 @85Hz
2F		59	01011001	89		
30	Standard timing # 6	31	00110001	49		640x480 @85Hz
31		59	01011001	89		
32	Standard timing # 7	C2	11000010	194		1800x1440 @75Hz
33		8F	10001111	143		
34	Standard timing # 8	01	00000001	1		NOT USED
35		01	00000001	1		
36	Detailed timing /monitor descriptor # 1	86	10000110	134		
37	1280x1024 @85Hz, 157.5MHz	3D	00111101	61		
38	Hor active = 1280 pixels	00	00000000	0		
39	Hor blanking = 448 pixels	C0	11000000	192		
3A		51	01010001	81		
3B	Vertical active = 1024 lines	00	00000000	0		
3C	Vertical blanking = 48 lines	30	00110000	48		
3D		40	01000000	64		
3E	Hor sync. offset = 64 pixels	40	01000000	64		
3F	H sync. width = 160 pixels	A0	10100000	160		
40	V sync. offset = 1 lines	13	00010011	19		
41	V sync. width = 3 lines	00	00000000	0		
42	H image size = 380 mm	7C	01111100	124		
43	V image size = 290 mm	22	00100010	34		
44		11	00010001	17		
45	No Horizontal border	00	00000000	0		
46	No Vertical Border	00	00000000	0		
47	Separate digital syncs., H / V polarity = +/+	1E	00011110	30		
48	Detailed timing /monitor descriptor # 2	00	00000000	0		
49	monitor serial Number	00	00000000	0		
4A	"55347BONZH47"	00	00000000	0		
4B		FF	11111111	255		
4C		00	00000000	0		
4D		35	00110101	53	5	
4E		35	00110101	53	5	
4F		33	00110011	51	3	
50		34	00110100	52	4	
51		37	00110111	55	7	
52		42	01000010	66	B	

BYTE HEX	FUNCTION	Value HEX	BIN	DEC	ASCII	Notes
53		4F	01001111	79	O	
54		4E	01001110	78	N	
55		5A	01011010	90	Z	
56		48	01001000	72	H	
57		34	00110100	52	4	
58		37	00110111	55	7	
59		0A	00001010	10		
5A	Detailed timing /monitor descriptor # 3	00	00000000	0		
5B		00	00000000	0		
5C	Monitor name	00	00000000	0		
5D	"DELL UR111"	FC	11111100	252		
5E		00	00000000	0		
5F		44	01000100	68	D	
60		45	01000101	69	E	
61		4C	01001100	76	L	
62		4C	01001100	76	L	
63		20	00100000	32		
64		55	01010101	85	U	
65		52	01010010	82	R	
66		31	00110001	49	1	
67		31	00110001	49	1	
68		31	00110001	49	1	
69		0A	00001010	10		
6A		20	00100000	32		
6B		20	00100000	32		
6C	Detailed timing /monitor descriptor # 4	00	00000000	0		
6D		00	00000000	0		
6E	MONITOR RANGE LIMITS	00	00000000	0		
6F		FD	11111101	253		
70		00	00000000	0		
71	Vert range	30	00110000	48		48HZ
72		A0	10100000	160		160HZ
73	Horizontal range	1E	00011110	30		30kHz
74		79	01111001	121		121kHz
75	Max Dot Clock	1C	00011100	28		280MHz
76	Secondary GTF	02	00000010	2		
77	Reserved 00	00	00000000	0		
78	Start freq. 80kHz	28	00101000	40		
79	C=40	50	01010000	80		
7A	M=3600	10	00010000	16		
7B		0E	00001110	14		
7C	K=128	80	10000000	128		
7D	J=35	46	01000110	70		
7E	Extension Flag	00	00000000	0		
7F	Checksum	8D	10001101	141		

6.2 *Example 2 - Legacy EDID example for reference*

Version 1 Revision 1 data structure format

This sample EDID is included for illustration only, it should not be considered as representative of any particular monitor. Note that this EDID Ver.1 Rev. 1 is only included as an example of legacy EDID data that a new E-EDID aware host may encounter. All new monitors shall conform to EDID structure Version 1 Rev 3.

Byte # (decimal)	**Byte # (HEX)**	**Field Name and *Comments***	**Value (HEX)**	**Value (binary)**
0	00	Header	00	00000000
1	01		FF	11111111
2	02		FF	11111111
3	03		FF	11111111
4	04		FF	11111111
5	05		FF	11111111
6	06		FF	11111111
7	07		00	00000000
8	08	EISA manufacturer code = *IBM*	24	00100100
9	09	*(Compressed ASCII)*	4D	01001101
10	0A	Product code = *6542*	8E	10001110
11	0B	*(Hex, LSB first)*	19	00011001
12	0C	32-bit serial number = *00000000*	00	00000000
13	0D		00	00000000
14	0E		00	00000000
15	0F		00	00000000
16	10	Week of manufacture = *10*	0A	00001010
17	11	Year of manufacture = *1995*	05	00000101
18	12	EDID Structure version # = *1*	01	00000001
19	13	EDID revision # = *1*	01	00000001
20	14	Video input definition = *Analog i/p, 1.0 Vp-p, separate syncs*	08	00001000
21	15	Max H image size (cm) = *40 cm*	28	00101000
22	16	Max V image size (cm) = *30 cm*	1E	00011110
23	17	Display gamma = *2.8*	B4	10110100
24	18	Feature support (DPMS) = *Standby, Suspend, RGB Color*	C8	11001000
25	19	Red / Green low bits	00	00000000
26	1A	Blue / White low bits	B2	10110010
27	1B	Red x *Rx = 0.625*	A0	10100000
28	1C	Red y *Ry = 0.340*	57	01010111
29	1D	Green x *Gx = 0.285*	49	01001001
30	1E	Green y *Gy = 0.605*	9B	10011011
31	1F	Blue x *Bx = 0.150*	26	00100110
32	20	Blue y *By = 0.065*	10	00010000
33	21	White x *Wx = 0.281*	48	01001000
34	22	White y *Wy = 0.311*	4F	01001111
35	23	Established timings I = *720 x 400 @ 70Hz* *640 x 480 @ 60Hz, 75Hz*	A4	10100100
36	24	Established timings *II* = *800 x 600 @ 72Hz, 75Hz* *1024 x 768 @ 60Hz, 70Hz, 75Hz* *1280 x 1024 @ 75Hz*	CF	11001111
37	25	Established timings III / Manufacturer's reserved timings *640 x 480, 800 x 600, 1024 x 768, 1280 x 1024 @ 85Hz* *1600 x 1200 @ 75Hz*	7C	01111100

Byte # (decimal)	Byte # (HEX)	Field Name and *Comments*	Value (HEX)	Value (binary)
38	26	Standard timing identification # 1	31	00110001
39	27	*640 x 480 @ 70Hz*	4A	01001010
40	28	Standard timing identification # 2	A9	10101001
41	29	*1600 x 1200 @ 60Hz*	40	01000000
42	2A	Standard timing identification # 3	A9	10101001
43	2B	*1600 x 1200 @ 70Hz*	4A	01001010
44	2C	Standard timing identification # 4	A9	10101001
45	2D	*1600 x 1200 @ 75Hz*	4F	01001111
46	2E	Standard timing identification # 5	81	10000001
47	2F	*1280 x 1024 @ 60Hz*	80	10000000
48	30	Standard timing identification # 6	01	00000001
49	31	*Unused*	01	00000001
50	32	Standard timing identification # 7	01	00000001
51	33	*Unused*	01	00000001
52	34	Standard timing identification # 8	01	00000001
53	35	*Unused*	01	00000001
54	36	Detailed timing descriptor # 1 / Monitor Descriptor # 1	10	00010000
55	37	*720 x 350 @ 70Hz mode : pixel clock = 28.32MHz*	0B	00001011
56	38	*Horizontal active = 720 pixels*	D0	11010000
57	39	*Horizontal blanking = 180 pixels*	B4	10110100
58	3A		20	00100000
59	3B	*Vertical active = 350 lines*	5E	01011110
60	3C	*Vertical blanking = 99 lines*	63	01100011
61	3D		10	00010000
62	3E	*Horizontal sync. offset = 18 pixels*	12	00010010
63	3F	*Horizontal sync. width = 108 pixels*	6C	01101100
64	40	*Vertical sync. offset = 38 lines*	62	01100010
65	41	*Vertical sync. width = 2 lines*	08	00001000
66	42	*Horizontal image size = 250 mm*	FA	11111010
67	43	*Vertical image size = 184 mm*	B8	10111000
68	44		00	00000000
69	45	*No Horizontal border*	00	00000000
70	46	*No Vertical Border*	00	00000000
71	47	*Separate digital syncs., Horizontal +ve, Vertical -ve polarity*	1A	00011010
72	48	Detailed timing descriptor # 2 / Monitor Descriptor # 2	00	00000000
73	49	*Flag (byte 2)*	00	00000000
74	4A	*Reserved*	00	00000000
75	4B	*FF(hex) defines Serial Number (ASCII)*	FF	11111111
76	4C	*Flag*	00	00000000
77	4D	*1st character of serial number = 3*	33	00110011
78	4E	*2nd character of serial number = 0*	30	00110000
79	4F	*3rd character of serial number = 9*	39	00111001
80	50	*4th character of serial number = A*	41	01000001
81	51	*5th character of serial number = B*	42	01000010
82	52	*6th character of serial number = C*	43	01000011
83	53	*7th character of serial number = 0*	30	00110000
84	54	*8th character of serial number = 0*	30	00110000
85	55	*9th character of serial number = 0*	30	00110000
86	56	*10th character of serial number = 2*	32	00110010
87	57	*11th character of serial number = 5*	35	00110101
88	58	*New line character : indicates end of s/n*	0A	00001010
89	59	*Padding with "blank" character*	20	00100000

Byte # (decimal)	**Byte # (HEX)**	**Field Name and *Comments***	**Value (HEX)**	**Value (binary)**
90	5A	Detailed timing descriptor # 3 / Monitor Descriptor # 3	00	00000000
91	5B	*Flag (byte 2)*	00	00000000
92	5C	*Reserved*	00	00000000
93	5D	*FE(hex) defines ASCII String*	FE	11111110
94	5E	*Flag*	00	00000000
95	5F	*1st character of string = T*	54	01010100
96	60	*2nd character of string = H*	48	01001000
97	61	*3rd character of string = I*	49	01001001
98	62	*4th character of string = S*	53	01010011
99	63	*5th character of string = <space>*	20	00100000
100	64	*6th character of string = I*	49	01001001
101	65	*7th character of string = S*	53	01010011
102	66	*8th character of string = <space>*	20	00100000
103	67	*9th character of string = A*	41	01000001
104	68	*New line character : indicates end of ASCII String*	0A	00001010
105	69	*Padding with "blank" character*	20	00100000
106	6A	*Padding with "blank" character*	20	00100000
107	6B	*Padding with "blank" character*	20	00100000
108	6C	Detailed timing descriptor # 4 / Monitor Descriptor # 4	00	00000000
109	6D	*Flag (byte 2)*	00	00000000
110	6E	*Reserved*	00	00000000
111	6F	*FE(hex) defines ASCII String*	FE	11111110
112	70	*Flag*	00	00000000
113	71	*1st character of string = T*	54	01010100
114	72	*2nd character of string = E*	45	01000101
115	73	*3rd character of string = S*	53	01010011
116	74	*4th character of string = T*	54	01010100
117	75	*5th character of string = ,*	2C	00101100
118	76	*6th character of string* = <space>	20	00100000
119	77	*7th character of string = T*	54	01010400
120	78	*8th character of string = H*	48	01001000
121	79	*9th character of string = E*	45	01000101
122	7A	*10th character of string* = <space>	20	00100000
123	7B	*11th character of string = E*	45	01000101
124	7C	*12th character of string = N*	4E	01001110
125	7D	*13th character of string = D*	44	01000100
126	7E	Extension flag = *0 EDID extension blocks*	00	00000000
127	7F	Checksum	8F	10001111

7. APPENDIX B - Answers To Commonly Asked Questions

Ref. #	Question	Answer
E1	What is relationship between EDID Version 1 Revision 0, EDID Version 1 Revision 1 and EDID Standard Version 2 Revision 0?	EDID standard document Version 2 Revision 0 contains definitions for 2 alternate data structures: a) EDID structure Ver. 1 Rev 0: This is the original data structure defined in DDC Standard Version 1 Revision 0. b) EDID structure Ver. 1 Rev. 1: This is a new data structure introduced in EDID Standard Ver. 2 Rev 0.
E2	What should 'ID Manufacturer Name' field contain?	Ref.: Sections 3.4 The registered EISA code for the manufacturer. EISA codes are now issued by Microsoft as part of their plug and play activity. Contact via e-mail: pnpid@microsoft.com Contact via fax: 206-936-7329, marked for attention of PNPID in Bldg. 27 **Note:** Previous versions of this standard made reference to BCPR as provider of this information. This is no longer correct. However, existing EISA ID codes issued by BCPR remain valid.
E3	What should the 'product code' field contain?	Ref.: Sections 3.4 An identifier for the product type, e.g. the model number. Note that some SW expects the combination of the 'manufacturer code' + the 'product code' to give a unique identifier.
E4	Table 3.17 Decode for Stereo Modes If bits 5 & 6 = 0 what should bit 0 equal?	Ref.: Table 3.17 Bits 5 & 6 = 0 when there is no stereo image present. In this condition bit 0 should be set to 0, bit 0 =1 is reserved.
E5	3.10.2 Detailed Timing Description Is following true? Horizontal sync offset = Horizontal front porch, if Horizontal border = 0	Ref.: Section 3.10.2 Yes
E6	3.10.3 Descriptor Description What is meaning of 'code page # 437'?	Ref.: Section 3.10.3 ASCII has multiple code pages to allow for national language variations; code page # 437 corresponds to American English.
E7	Does 'Horizontal active pixel' = the total number of pixels on a horizontal line?	Ref.: Sections 3.10.2 & 3.12 The horizontal component of timing consists of the Horizontal active + the Horizontal blanking periods.
E8	Is 'Image aspect ratio' = (Horizontal active pixel) / (Vertical active pixel)?	Ref.: Section 3.9 Yes.
E9	If calculated aspect ratio is not 16:10, 4:3, 5:4 or 16:9 what should be used?	Ref.: Section 3.9 Only applies to standard timings defined by VESA, all match except for 720x400
E10	How should VESA standard timings not listed in the 'established timings' section be handled?	Ref.: Section 3.8 The 'standard timing identification' fields (2 bytes each) provide for a coded way to identify timings not included in the 'established timings' section. It is also possible to fully describe a required timing in a 'detailed timing descriptor'.

Ref. #	Question	Answer
E11	If I want to use the ‘standard timing identification’ fields, where do I get the ‘Horizontal active pixel’ and ‘image aspect ratio’ for a particular timing?	Ref.: Section 3.9 VESA timing standards include these parameters.
E12	If I want to use a ‘detailed timing descriptor’ block, where do I get the detailed information?	Ref.: Section 3.10 If it is a standard VESA timing then all the details are part of the standard. If it is a proprietary timing then details need to be established by the developer.
E13	Section 3.8 Established Timing Section says “... 1-bit flags and are used to indicate support for established VESA and other common timings ...” Does ‘support’ mean that the mode is pre-set in the monitor or that monitor is capable of handling the mode?	Ref.: Section 3.7 Different manufacturers have applied different interpretations, it appears that most define 'support' to mean that the monitor is capable of handling the mode but may require user adjustment of image size, centering, etc.
E14	3.10.3 Descriptor Description, Definition # 5 Color Point “An index number of 00h means that no color data follows” Does this mean that only white gamma follows or neither white chromaticity nor gamma follow?	Ref.: Section 3.10.3 An index value = 00h means that neither white chromaticity nor white gamma values follow.
E15	Ref. as E14 What binary index value should the white point index start from? Arbitrary?	Ref.: Section 3.10.3 It is arbitrary and left to individual manufacturers. However, there is white color and gamma data stored in bytes 24 - 27 (decimal) with no explicit index number. Implementers may wish to assume that this is an implicit index number of 1 and hence the explicit index numbers in a descriptor block should start at 2.
E16	Ref. as E14 How many color point monitor descriptors are allowed? One or up to four?	Ref.: Section 3.10.3 Up to four. There are no restrictions on the number of blocks that may be redefined to a particular type of descriptor.
E17	What is the most reliable way for a graphics sub-system to determine the operating range of the attached monitor?	Ref.: Sections 3.10.3 For EDID structure Version 1 it is recommended that the Monitor Range Limit Descriptor (if provided) be used. Monitor operating range limits cannot be reliably inferred from any other source within the EDID.