



DPM™

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Display Power Management (DPM) Standard
Release A
March 3, 2003

Purpose:

To standardize on a common definition of low power states for the computer display industry.

Summary:

Government agencies and independent organizations worldwide are involved in setting limits or goals for power consumption in office equipment. Desktop computers are one of the primary targets for this effort. The display consumes a significant portion of the power used in a desktop computer system

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Revision History

Release A March 3, 2003

Initial release of the standard. The body of this standard is derived from the Display Power Management Signaling Standard, Version 1.0, Revision 1.0 dated August 20, 1993.

Acknowledgments

This document was made possible by the joint effort of members of VESA Display Committee. In particular, the following individuals and their companies contributed with time and knowledge.

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1 Introduction and Scope

1.1 Purpose

This document replaces the previous DPMS Standard Version 1.0 Revision 1.0, dated August 20, 1993. This document will redefine the power state modes of operation. This new specification will reflect the current state of art for power management.

1.2 Activation Criteria

This document does not specify the criteria for entering into or out of power management states; it does specify the signaling method used to enter these states. This document is based on the VESA DPMS Standard Ver. 1.0 Rev. 1.0.

1.3 Computer Systems Supported

DPM is intended to be independent of computer platform and operating systems.

1.4 Synchronization Formats Supported

This standard applies to all synchronization (sync) formats: separate horizontal and vertical sync, composite sync, and sync on green.

1.5 Programming Interface

No programming interface is defined within this document.

2 Terms and Definitions

DPMS state	DPM State	Industry definition
ON	ON	ON
Standby	OFF	Sleep
Suspend	OFF	Sleep
OFF	OFF	Off/deep sleep/standby power

Table 2-1

DPM defines two power modes: On and OFF. It is expected that after a user defined or default idle period, the host system will initiate power management, although other criteria are allowed.

2.1 Synchronization Signals

The DPM standard, like the DPMS standard, is based on the condition of the synchronization signals to the display. Two conditions are defined: pulses and no pulses

2.1.1 Pulses

Pulses for the Horizontal sync signal are defined as greater than 10 kHz repetition frequency. Pulses for the Vertical sync signal are defined as greater than 20 Hz repetition frequency.

Note: It is highly recommended that to optimize recovery time from Off state the synchronization signals be maintained at the same frequency and duty cycle as last used in the On State.

2.1.2 No Pulses

No pulses is defined as less than 10 Hz repetition frequency on either horizontal or vertical. The region in between pulses and no pulses is undefined.

2.2 Blanked Video

Blanked video is defined as the condition for which the video signal contains no picture information. This signal may or may not contain a set-up signal. DPM does not define any modes related to Blank video; only synchronization pulses cause a DPM event.

2.3 Display Controller

Is defined as the graphics hardware chip and its related components, board and/or system from which the display receives the video signals to be displayed, including the synchronization signals.

2.4 Display

Is defined as any device that displays the output from the display controller. This may include CRT, flat panel, or any refresh display device.

2.5 Host System

Is defined as the device that includes the central processing unit, display controller, operating system and application software.

3 Display Power Management States

Transitions between states shall not require any manual display adjustment unless otherwise noted. It is recommended that the display wait for a minimum of 5 seconds before transition from On to avoid unintentionally entering a power saving state during display resolution and timing mode changes.

3.1 On Mode

This refers to the state of the display when it is in full operation.

3.2 Off Mode

This indicates that the display is consuming the lowest level of power and is non-operational. Recovery from this state may optionally require the user to manually power on the monitor.

4 Display Power Management Summary

State	Horizontal	Signals Vertical	Video	DPM Compliance Requirement	Power Consumption	Recovery Time
On	Pulses	Pulses	Active	Mandatory	Normal	Not Applicable
Off	No Pulses Pulses No Pulses	No Pulses No Pulses Pulses	None	Mandatory	Low	System Dependent

NOTE:

- 1: See Section 2. for “Terms and Definitions” of signals.
- 2: It is recommended that the display wait for a minimum of 5 seconds before transition from On to avoid unintentionally entering into a power saving state during display resolution and timing mode changes. Transition from any power saving state can be instantaneous.
- 3: Recovery from Off state may optionally require the user to manually power on the monitor.
- 4: Recovery time depends on recovery to the same mode as before the display was in the low power state.

5 Appendix A: Override Capability (optional)

An optional override capability is also defined. This is not a power management state. Its intention is to provide display manufacturers a suggested method to override the DPM function during the design, test, burn-in, manufacturing or diagnostic processes if desired.

To initiate Override, both the horizontal and the vertical sync signals shall be in the no pulses condition when the display is manually powered on. This condition should be maintained during the entire time Override is required. As soon as pulses are detected on either synchronization signal, the display shall enter DPM operation.

6 Appendix B: Related Documents

VESA Display Power Management Signaling (DPMS), Version 1.0, Rev 1.0 – August 20, 1993

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