C H A P T E R   2 2

Scanners and Digital Cameras

This chapter presents the requirements and recommendations for scanners and digital cameras under the Microsoft Windows family of operating systems.

Version 1.1

Includes changes to References for Scanners and Digital Cameras

Contents

Overview for Scanners and Digital Cameras

The PC 97 requirements for scanners and digital cameras seek to ensure a true Plug and Play experience for users:

- Each device must comply with the PC 97 requirements for Plug and Play for the specific bus it uses.

- Each device must supply a human-readable device ID in the manner required for the specific bus it uses.

- Each device must comply with the PC 97 requirements for power management for that device type and for the specific bus it uses.

Scanners and Digital Cameras Basic Features

This section summarizes the basic hardware requirements for scanners and digital cameras for PC 97.

1. Identifiers for connectors for port and peripherals
Required

To ensure proper connection by the user between cable and connector, an icon or text identifier must be added to any external connector, using vendor designs or icons defined in Appendix A, "Icons." The icon can be molded into the plastic or printed (either stamped directly or affixed as a permanent sticker).

2. ICC color matching support
Required

The Image Color Matching APIs and functionality for Windows 95 are described in the Windows 95 SDK and DDK on MSDN. Windows supports using color profiles that comply with the ICC Profile Format Specification. For more information, see the International Color Consortium (ICC) web site at http://www.color.org.

Minimum implementation of ICC color matching requires one or more ICC profiles to be installed. Providing a monitor color calibration utility is recommended for generating, editing, and installing ICC profiles.

Eastman Kodak, the supplier of the default color matching method for ICM in Windows 95, has a wide array of advanced color management technology and products including device profiles that can be used to optimize a system. For contact information, see the "References for Scanners and Digital Cameras" section at the end of this chapter.

Scanner SCSI Requirements

This section summarizes requirements for scanners and digital cameras that use SCSI.

3. SCSI hardware complies with PC 97 SCSI requirements
Required

All SCSI hardware must comply with the requirements defined in the "SCSI" chapter in Part 3 of this guide. This ensures complete Plug and Play capabilities with SCSI hardware. For example, a user must be able to attach any SCSI peripheral on a system with SCSI support; the operating system should recognize it automatically, load and initialize the appropriate drivers, and then make the device available for use.

4. SCSI scanner must attach to any PC 97-compliant SCSI controller
Required

All SCSI scanners must be able to attach successfully to any SCSI controller that meets the PC 97 requirements defined in the "SCSI" chapter of this guide.

Scanner USB Requirements

This section summarizes requirements for scanners and digital cameras that use USB.

5. USB hardware complies with PC 97 USB requirements
Required

All USB hardware must comply with the requirements defined in the "USB" chapter in Part 3 of this guide, which includes the USB specifications for specific device types. This ensures complete Plug and Play capabilities with USB hardware and meets all the core and device requirements for USB. For example, a user must be able to dynamically attach any USB peripheral to any USB connector; the operating system should recognize it automatically, load and initialize the appropriate drivers, and then make the device available for use.

6. USB scanners support string descriptors and comply with Image Class device requirements
Required

The device descriptor listed in section 9.6.1 of the USB core specification must have valid iManufacturer and iProduct string descriptor indexes. All USB scanners must support sections 9.4.3 and 9.6.5 of the USB core specifications.

All devices must comply with the USB Image Class device requirements.

Scanner IEEE 1394 Requirements

This section summarizes requirements for scanners and digital cameras that use an IEEE 1394 connection.

7. IEEE 1394 hardware complies with PC 97 requirements for 1394
Required

All IEEE 1394 hardware must comply with the requirements defined in the "IEEE 1394" chapter in Part 3 of this guide.

Scanner Serial Requirements

This section summarizes requirements for scanners and digital cameras that use the serial port.

8. Serial hardware complies with PC 97 requirements for serial hardware
Required

All serial hardware must comply with the requirements for serial devices defined in the "Serial, Parallel, and Wireless Support" chapter in this guide. This ensures that serial hardware has complete Plug and Play capabilities.

For example, a user must be able to attach any serial peripheral to any serial connector; the operating system should recognize it automatically, load and initialize the appropriate drivers, and then make the device available for use. Notice that this requirement includes complete support for the resource requirements for serial devices.

9. Serial scanners support ClassName and UserName PNP fields
Required

The COM device ID fields must fill in the ClassName field with "\SCANNER" and fill in the UserName field with a human-readable description of the device. For information, see the Plug and Play External COM Device Specification v. 1.0.

Scanner Parallel Requirements

This section summarizes requirements for scanners and digital cameras that use a parallel port.

10. Parallel hardware complies with PC 97 parallel requirements
Required

All parallel hardware must comply with the Plug and Play requirements for parallel ports, as defined in the "Serial, Parallel, and Wireless Support" chapter in this guide. This includes implementing the required support in the Plug and Play Parallel Port Devices Specification v. 1.0b.

These requirements and recommendations ensure that a parallel device has complete Plug and Play capabilities. For example, a user must be able to attach any parallel peripheral to any parallel connector; the operating system should recognize it automatically, load and initialize the appropriate drivers, and then make the device available for use.

Each parallel scanner or digital camera must have a Plug and Play device identifier for an IEEE 1284 peripheral. At a minimum, the device-ID string must contain these keys: MANUFACTURER, MODEL, CLASS, and DESCRIPTION.

- The CLASS key value for scanners is SCANNER.

- The CLASS key value for digital cameras is DIGCAM.

A parallel device can also be designed to meet the recommendation to support the COMPATIBLE key in the device identification string, as defined in the "Serial, Parallel, and Wireless Support" chapter.

PC 97 Design for Scanners and Digital Cameras

This section summarizes requirements related to the design initiatives for PC 97 in Part 1 of this guide.

Plug and Play for Scanners and Digital Cameras

The items in this section are requirements for Plug and Play capabilities. For Plug and Play requirements related to the parallel port on the PC, see the "Serial, Parallel, and Wireless Support" chapter in Part 3, or see the related bus port requirements in Part 3 of this guide.

11. Support Plug and Play for all supported buses
Required

Complete Plug and Play support must be implemented for all buses that the device supports. For information about the Plug and Play requirements, see the related bus-class definitions in Part 3 of this guide.

12. Plug and Play device identifier
Required

All devices for all buses must supply a human-readable device ID in the manner required for the bus it uses. The device ID requirements for each bus are defined in Part 3 of this guide, except the device ID requirements for devices that use the parallel port are defined in the IEEE 1284 specification, as summarized in the "Serial, Parallel, and Wireless Support" chapter in this guide.

Power Management for Scanners and Digital Cameras

This section summarizes the specific power management requirements for scanners and digital cameras.

13. Compliance with "Device Class Power Management Reference Specification"
Required

The "Device Class Power Management Reference Specification" for this Device Class provides definitions of the OnNow device power states (D0–D3) for these devices. The specification also covers device functionality expected in each power state and the possible Wakeup event definitions for the class.

14. Support Wakeup Events defined in "Device Class Power Management Reference Specification"
Optional

For PC 97, the ability to cause a Wakeup event as defined in the "Device Class Power Management Reference Specification" is an optional feature.

15. Support power management requirements for bus
Required

The device must support the power management requirements for the bus it uses, as defined in Part 3 of this guide.

Device Driver and Installation for Scanners and Digital Cameras

This section summarizes the device driver requirements for scanners and digital cameras.

16. Device driver and installation meet Windows and Windows NT standards
Required

The manufacturer does not need to supply a driver if a standard driver provided with the operating system can be used. If the manufacturer supplies drivers, the requirements for installation include the following:

- All devices and drivers must pass testing by Microsoft WHQL.

- All configuration settings are stored in the registry.

- The correct minidriver, VxD, or any other manufacturer-supplied files specified in the device's INF must be installed in the correct locations.

- Driver installation and removal use Windows-based methods as defined in the Windows 95 and Windows NT DDKs.

- Driver files provided by the vendor must not use the same file names as used by files included in Microsoft operating systems, unless specifically agreed with Microsoft.

- Only 32-bit protected-mode components are installed. No real-mode or 16-bit protected-mode components are provided in order to operate under Windows.

- Driver supports Plug and Play IRPs (for WDM drivers) or messages (for VxDs).

- If support using WDM drivers is provided in the operating system, the driver supplied by the manufacturer must be a WDM minidriver.

For complete details about standard installation requirements for drivers, see "Basic PC 97" in Part 2 of this guide.

17. Applications provided with device meet Windows standards
Required

Any Windows-based applications provided with the device must meet Microsoft requirements for software compatibility as indicated by the "Designed for Microsoft Windows" logo.

References for Scanners and Digital Cameras

This section lists some of the publications, services, and tools available to help build hardware that works with Windows operating systems.

Windows 95 and Windows NT Device Driver Kits (DDK)
   MSDN Professional membership

Plug and Play specifications
   http://www.microsoft.com/hwdev/pnpspecs.htm

Device Class Power Management Reference Specification
   http://www.microsoft.com/hwdev/onnow.htm

International Color Consortium
ICC Profile Format Specification
   http://www.color.org

Eastman Kodak
   Attn. Color Management Group
   164 Lexington Road
   Billerica, MA 01821
   1-800-75COLOR

Version 1.1 References Update:
Device class power management reference specifications
   http://www.microsoft.com/hwdev/onnow.htm

International Color Consortium (ICC)
ICC Profile Format Specification
　http://www.color.org

Plug and Play specifications
　http://www.microsoft.com/hwdev/respec/

Universal Serial Bus Specification, Version 1.0
USB Imaging Class Specification
　Phone: (503) 264-0590
　Fax: (503) 693-7975
　http://www.usb.org

WDM device driver support and WDM Still Image architecture white papers
　http://www.microsoft.com/hwdev/desinit/

Windows and Windows NT DDKs and Win32 SDK
　MSDN Professional membership

Checklist for Scanners and Digital Cameras

Scanners and Digital Cameras Basic Features

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12. Plug and Play device identifier
Required

Power Management for Scanners and Digital Cameras

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Required

14. Support Wakeup Events defined in "Device Class Power Management Reference Specification"
Optional

15. Support power management requirements for bus
Required

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