



Preliminary User's Manual

μPD720130

USB2.0 to IDE Bridge

USB Mass Storage Class Driver Kit for Windows98SE



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INTRODUCTION

Readers	This manual is intended for engineers who intend to use USB Mass Storage Class Driver for the μ PD720130.						
Purpose	This manual explains how to use USB Mass Storage Class Driver Kit for Windows98SE for the μ PD720130 in the following arrangement.						
Arrangement	<p>This manual includes the following chapters.</p> <ul style="list-style-type: none"> • Overview • Driver kit • Modification of "INF" files • Installation of driver 						
Reading This Manual	It is assumed that the readers of this manual have general knowledge of Windows and USB mass storage class specification.						
Conventions	<table> <tr> <td>Note:</td><td>Footnote for item marked with Note in the text</td></tr> <tr> <td>Caution:</td><td>Information requiring special attention</td></tr> <tr> <td>Remark:</td><td>Supplementary information</td></tr> </table>	Note:	Footnote for item marked with Note in the text	Caution:	Information requiring special attention	Remark:	Supplementary information
Note:	Footnote for item marked with Note in the text						
Caution:	Information requiring special attention						
Remark:	Supplementary information						
Related Documents	<p>The related documents indicated in this document may include preliminary versions.</p> <ul style="list-style-type: none"> • μPD720130 Data Sheet: S16302E • μPD720130 Users Manual: S16412E • μPD720130 Application Note: S16447E • ET-0148 User's Manual: S16429E <p>Be sure to read the latest version of the above documents when using the μPD720130.</p>						

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CHAPTER 1 OVERVIEW

The μ PD720130 is designed to bridge USB 2.0 and ATA/ATAPI. The μ PD720130 complies with the Universal Serial Bus Specification Revision 2.0 full-/high-speed signaling and works up to 480 Mbps.

This Users Manual provides explanation of the installation of USB Mass Storage Class Driver to control the μ PD720130 on Windows98SE. For the functions of the μ PD720130, refer to **μ PD720130 User's Manual (S16412E)**. And explanation of Serial ROM utility, refer to **μ PD720130 Application Note (S16447E)**.

1.1 μ PD720130

To realize USB 2.0 to ATA/ATAPI bridge, the μ PD720130 integrated a CISC processor (V30MZ), an ATA/ATAPI controller, an endpoint controller (EPC), a serial interface engine (SIE), and an USB2.0 transceiver into a single chip. The USB2.0 protocol and class specific protocol (bulk only protocol) are handled by the USB2.0 transceiver, the SIE, and the EPC while the transport layer is being handled by V30MZ processor. The firmware to control the μ PD720130 is located in an embedded ROM. An external Serial EEPROM is used to hold customer's VID and PID, and also firmware to update the function of the μ PD720130.

Features

- Compliant with Universal Serial Bus Specification Revision 2.0 (Data Rate 12/480 Mbps)
- Compliant with ATA/ATAPI-6 (LBA48, PIO Mode 0-4, DMA Mode 0-2, Ultra DMA/66 Mode 0-4)
- USB2.0 high-speed bus powered device capability
- Certified by USB implementers forum and granted with USB 2.0 high-speed Logo (TID :40320125)
- One USB2.0 high-speed transceiver / receiver with full-speed transceiver / receiver
- USB2.0 High-speed or Full-speed packet protocol sequencer (Serial Interface Engine)
- Automatic chirp assertion and full-/high-speed mode change
- Support set feature (TEST_MODE) functionality
- Support power control functionality for ATAPI device as CD-ROM
- System Clock is generated by 30 MHz X'tal
- 2.5 V and 3.3 V power supply

1.2 Serial ROM

The μ PD720130 loads some data such as Vendor ID, Product ID and some additional USB related information from serial ROM during initialization. Example such data in serial ROM is as follows. Since checksum should be calculated, please use NEC's tool (i.e. EPUT130) to provide serial ROM data.

Offset (H)	Data Size	Symbol	Description
+00	1 Word	idMark	Validation Mark of 55AAH
+02	1 Word	Checksum	Check sum of serial ROM
+04	1 Word	Flags	Control for descriptor overwrite
+06	1 Byte	ExPinReset	PWR, CLC, DCC, DV[1:0] Reset bit map field
+07	1 Byte	ExPinSet	PWR, CLC, DCC, DV[1:0] Set bit map field
+08	1 Word	idVendor	idVendor field in Device descriptor
+0A	1 Word	idProduct	idProduct field in Device descriptor
+0C	1 Word	bcdDevice	bcdDevice field in Device descriptor
+0E	1 Word	Reserved	Reserved for future use.
+10	1 Byte	MaxPower Bus	bMaxPower field in Configuration descriptor for Bus powered mode
+11	1 Byte	MaxPower Self	bMaxPower field in Configuration descriptor for Self powered mode
+12	1 Byte	bInterfaceClass	bInterfaceClass field in Interface descriptor
+13	1 Byte	bInterfaceSubClass	bInterfaceSubClass field in Interface descriptor
+14	1 Byte	bInterfaceProtocol	bInterfaceProtocol field in Interface descriptor
+15	1 Byte	Reserved	Reserved for future use.
+16	1Word	TxModeReset	IDE transmission type such as Ultra DMA 66 Reset bit map field
+18	1Word	TxModeSet	IDE transmission type such as Ultra DMA 66 Set bit map field
+1A	6 Bytes	Reserved	Reserved for future use.
+20	32 Bytes	ManufactureString	String descriptor for Manufacturer
+40	32 Bytes	ProductString	String descriptor for Product
+60	32 Bytes	SerialString	String descriptor for Device serial number
+80	128 × n Bytes	FW Patch	Firmware patch module for self-powered/bus-powered mode

CHAPTER 2 DRIVER KIT

2.1 System Requirements

This kit is working on following Operating System.

- (1) Microsoft Windows 98 Second Edition
- (2) Microsoft Windows 98

Because the USB Mass Storage Class Driver is normally provided on Microsoft Windows Me, Microsoft Windows 2000 and Microsoft Windows XP, you need not to use this driver kit on those Operating Systems.

2.2 Contents of the Driver Kit

The list of Kit is shown below.

- NECUSTOR.SYS
- NECUSTFL.INF
- NECUSTPD.PDR
- NECUSTOR.INF
- NECUTRAY.EXE

[Memo]

CHAPTER 3 MODIFICATION OF “INF” files

3.1 Overview

The μ PD720130 can be set original VID and PID by serial ROM. If you changed VID and PID, the “INF” file of this kit should be rewritten.

3.2 MODIFICATION OF NECUSTOR.INF

(1) VID and PID

Please rewrite VID_0409 to number you set in your serial ROM, and PID_006A to number you set too.

```
[NEC]
%NEC_IDE-Bridge%=NECUSTOR.Dev,USB\VID_0409&PID_006A      ;USB2.0 IDE-Bridge
%NECUSTOR\DISK.DeviceDesc%=usbmspd.Dev,NECUSTOR\DISK
```

Ex.) VID=1234, PID=5678

```
[NEC]
%NEC_IDE-Bridge%=NECUSTOR.Dev,USB\VID_1234&PID_5678      ;USB2.0 IDE-Bridge
%NECUSTOR\DISK.DeviceDesc%=usbmspd.Dev,NECUSTOR\DISK
```

[Memo]

CHAPTER 4 INSTALLATION OF DRIVER

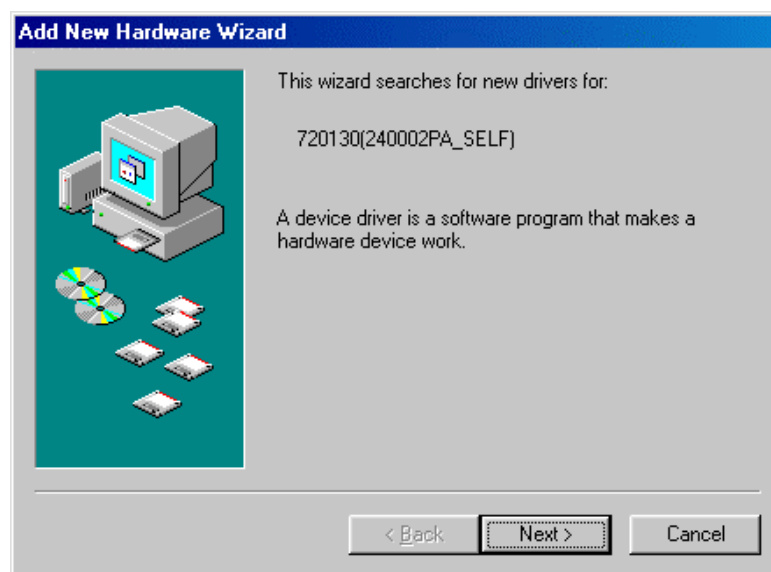
This chapter explains how to install driver with this kit.

4.1 Preparation to install

Copy the driver files to Floppy disk or Hard disk. If your device is self-powered, power on it.

4.2 Procedure for installation

- 1) Plug-in your device to USB port on PC, then a wizard of driver's installation starts.
- 2) Click "**Next >**".



CHAPTER 4 INSTALLATION OF DRIVER

- 3) Select “**Search for the best driver for your device.**” and click “**Next**”.



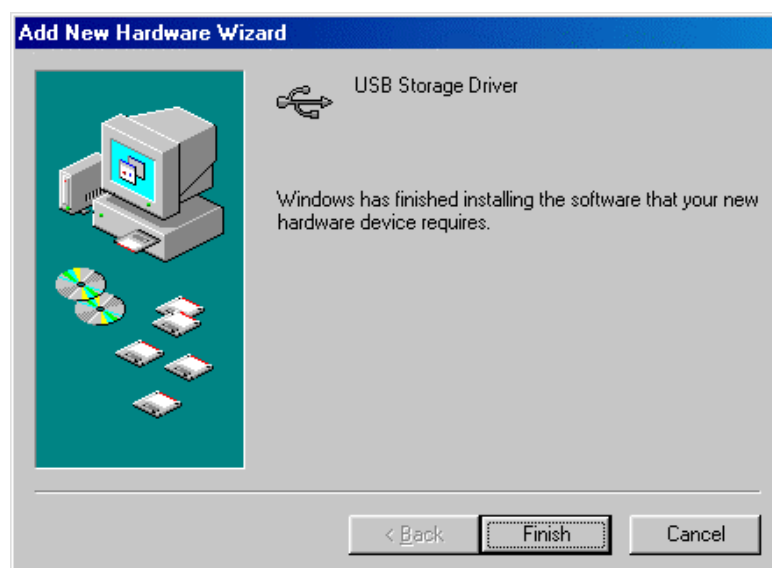
- 4) Check “**Specify a location**”, and specify the directory copied driver.



5) Click “Next >”.

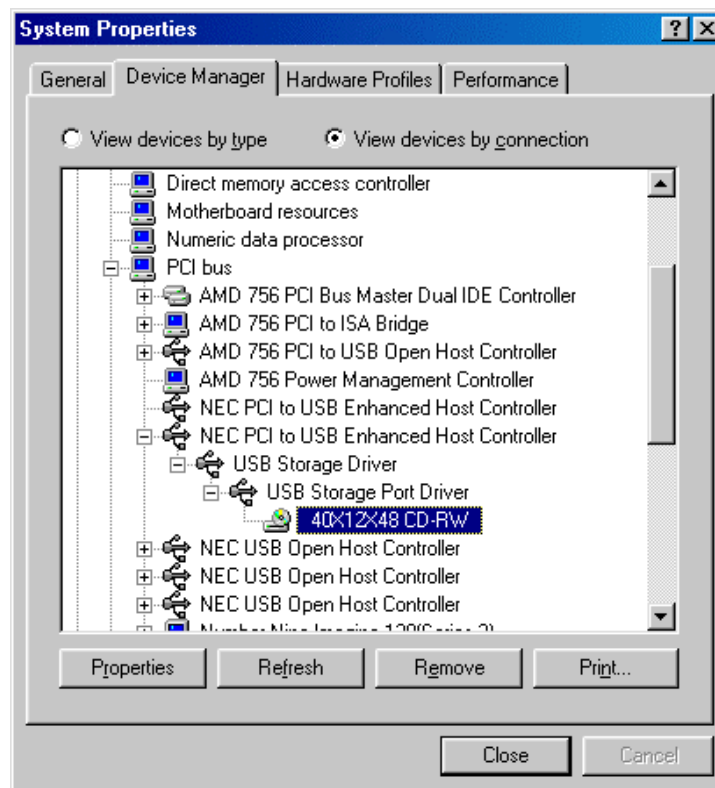


6) Click “Finish”.



CHAPTER 4 INSTALLATION OF DRIVER

7) Check your device is in the tree correctly by "Device Manager".



4.3 Installing with installation program

Using installation program makes the installation of driver easily.

Before you connect your device to USB port on PC, you might copy some files of driver kit to specified locations with installation program.

Caution

Don't connect your device to USB port on PC, when you execute installation program.

[File list and destination]

File name	Destination	Remark
NECUSTOR.SYS	%WIN_DIR%\SYSTEM32\DRIVERS	
NECUSTOR.INF	%WIN_DIR%\INF	
NECUSTPD.PDR	%WIN_DIR%\SYSTEM\IOSUBSYS	
NECUSTFL.SYS	%WIN_DIR%\SYSTEM32\DRIVERS	
NECUTRAY.EXE	%WIN_DIR%	

Note

%WIN_DIR% means the directory installed Windows.

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