

**ZS-6224 Series**  
**USB-PIO Adapter**

**User's Manual**



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URL <http://www.zenisu.co.jp/>

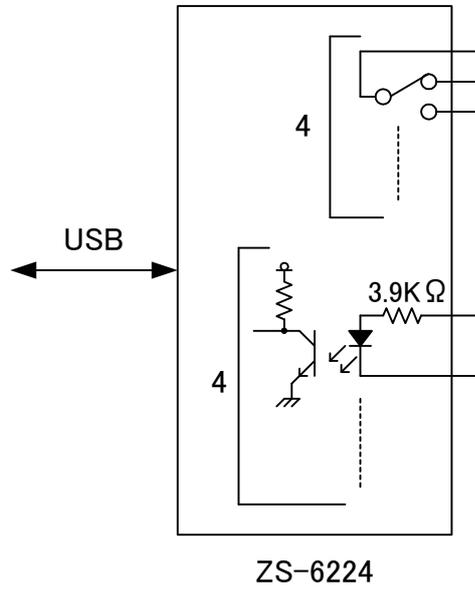
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# 1.Outline

ZS-6224 is a unit built-in 4 relays and 1 photocoupler.

It is possible to perform insulation between circuits, level conversion, etc, by connecting relays and photocoupler.



# 2.Specification

## 2.1.Operation environment

- PC : IBM PC/AT compatible machine (USB required)
- OS : Microsoft Windows 2000 , XP , Vista

## 2.2.USB

Compliant with USB2.0

### 2.3.Product specification

Model	ZS-6224P	ZS-6224S
Feature	Printed circuit boarded type	Small case built-in type
Data connector	50-core flat cable	50-core flat cable
Power supply	USB bus power (DC4.75V to 5.25V 100mA or less)	USB bus power (DC4.75V to 5.25V 100mA or less)
Environment	Temperature 0°C to 50°C Humidity 85% or less	Temperature 0°C to 50°C Humidity 85 or less
Storage Temp	-20°C to 80°C	-20°C to 80°C
Size	100 × 74 × 20H	150 × 100 × 30H
Accessory	Data connector x 1 57-30240	Data connector x 1 57-30240

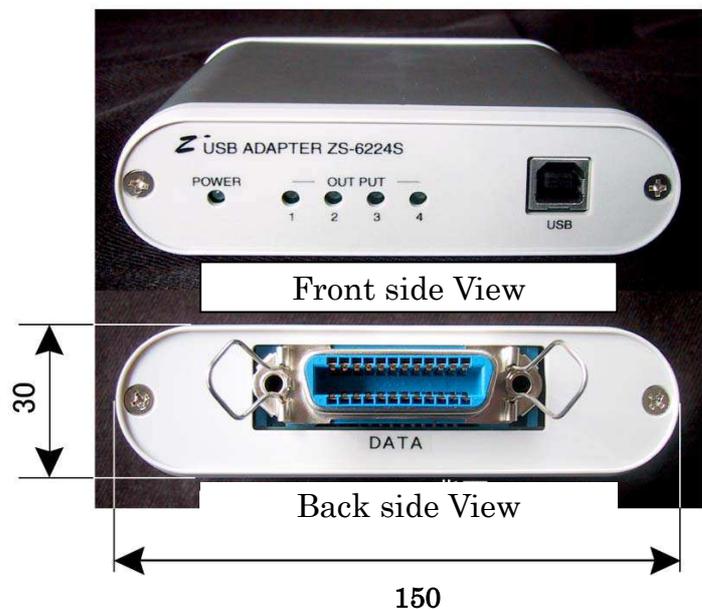
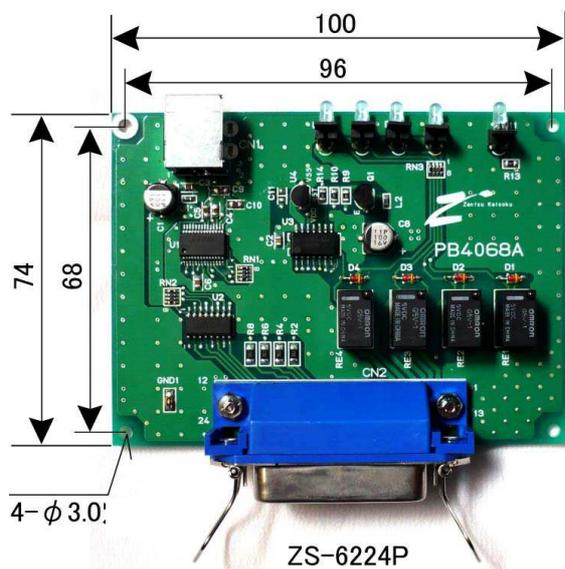
### 2.4.Relay

Relay	G5V-1
Resistance	100mΩ or less
Switching part rated load	AC125V 0.5A、DC24V 1A
Operation time	5ms or less
Recovery time	5ms or less

### 2.5.Photo coupler

Photo coupler	PS2801-4
Input voltage	DC5V to DC24V

### 2.6.Appearance



## 3.Install

### 3.1.Device driver

Please download the device driver corresponding to each OS from our website below.

<http://www.zenisu.co.jp>

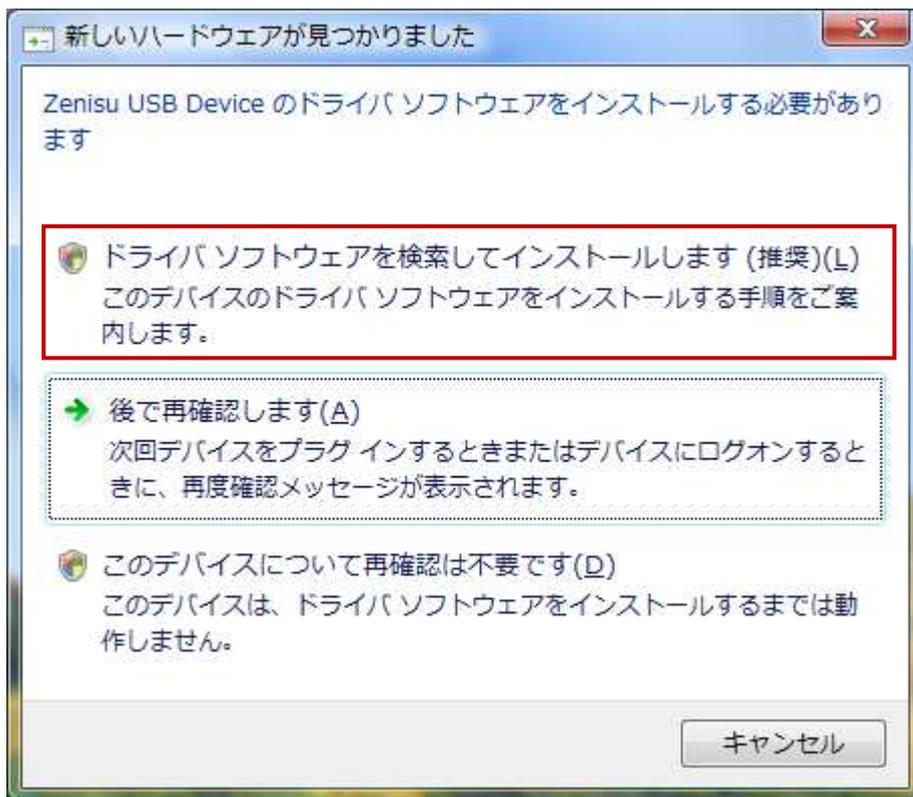
### 3.2.Windows Vista

In order to use this product, it is necessary to install hardware and device drivers.

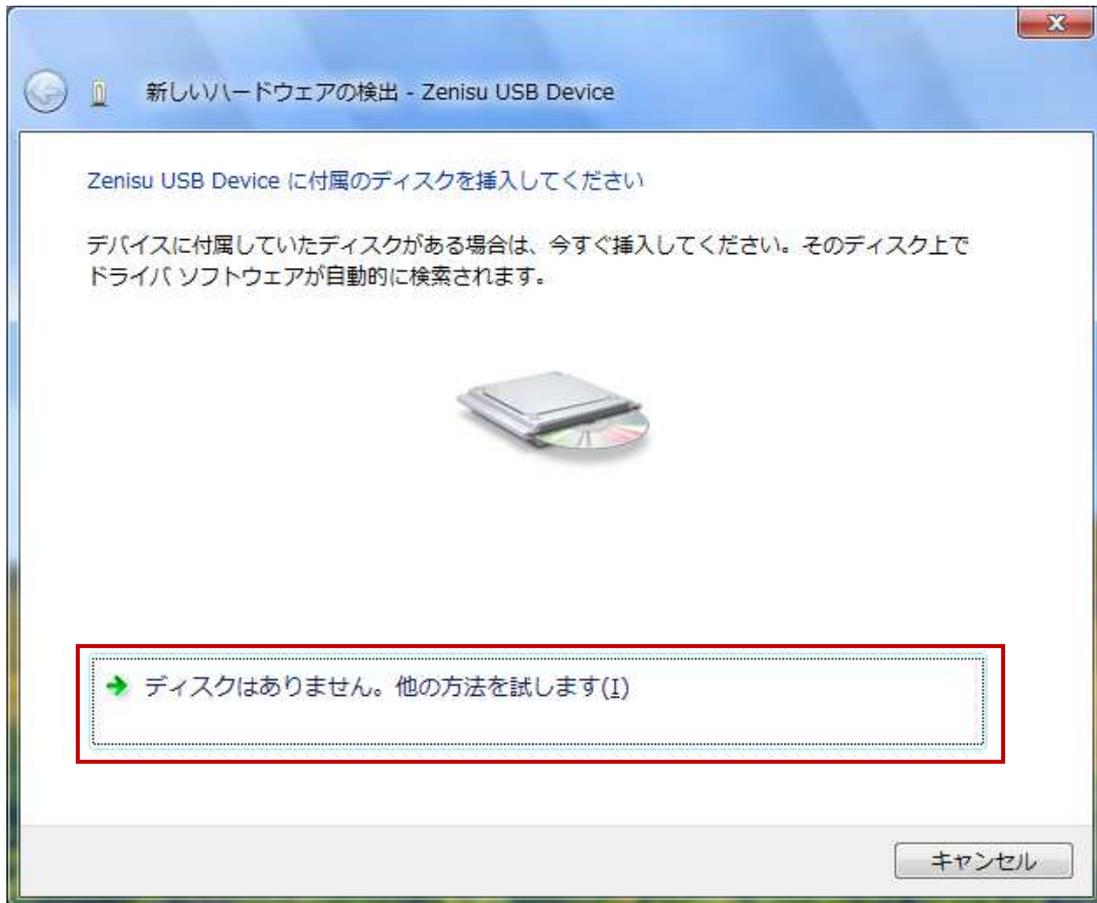
- ① Turn on the power to the PC and start Windows.
- ② Connect the PC and this product with USB cable.
- ③ Install the device driver.
- ④ Installation is completed.

The “Device driver installation method” is explained as below. The display of sentences may differ depending on the personal computer, but it is basically the same.

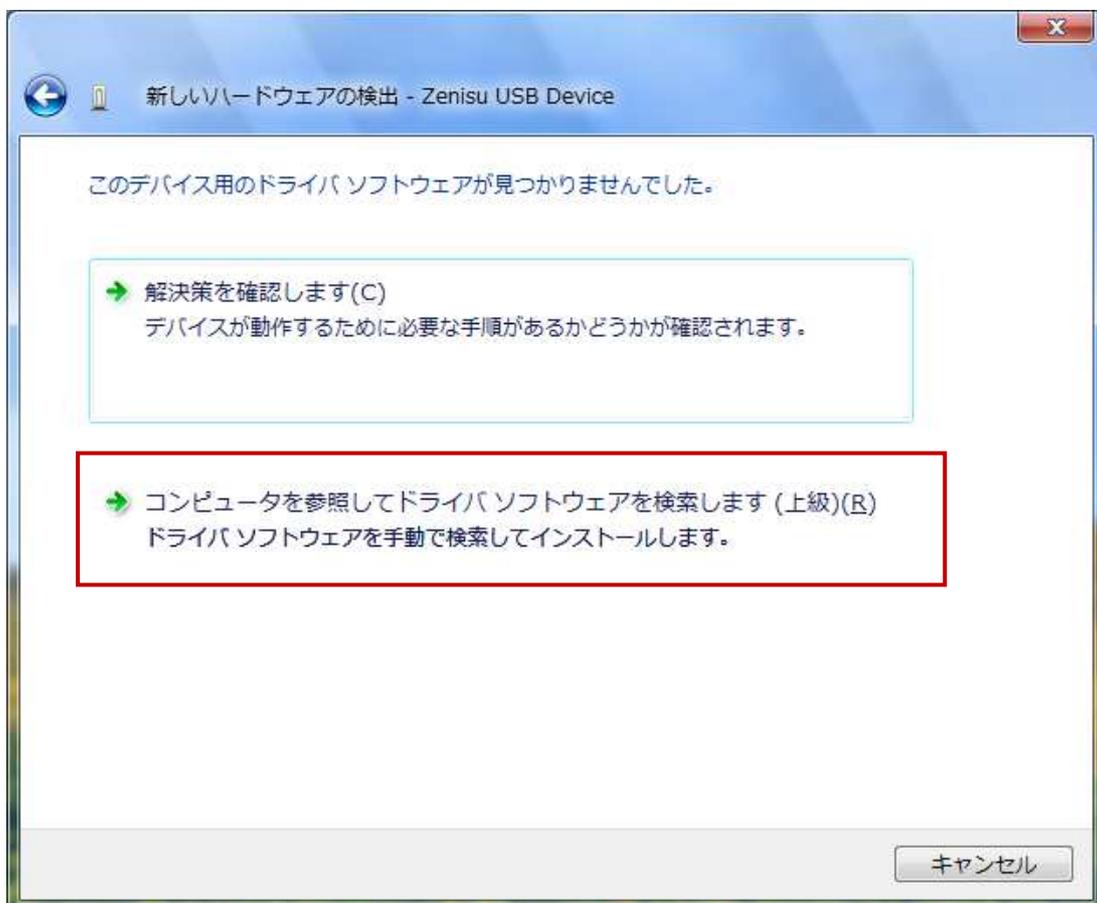
When connecting this product to the computer at first, the following screen will be displayed.



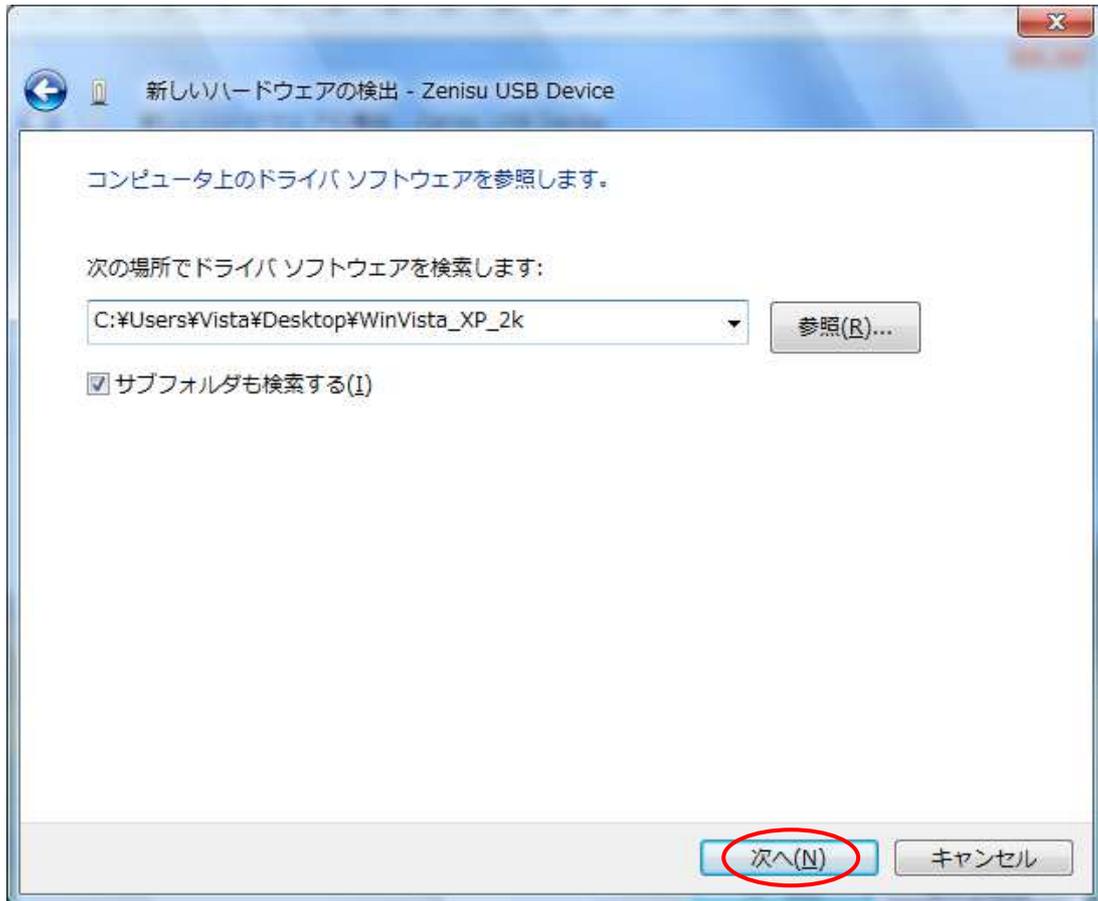
Click “Search and install driver software”.



Click “There is no disc, try other method”.

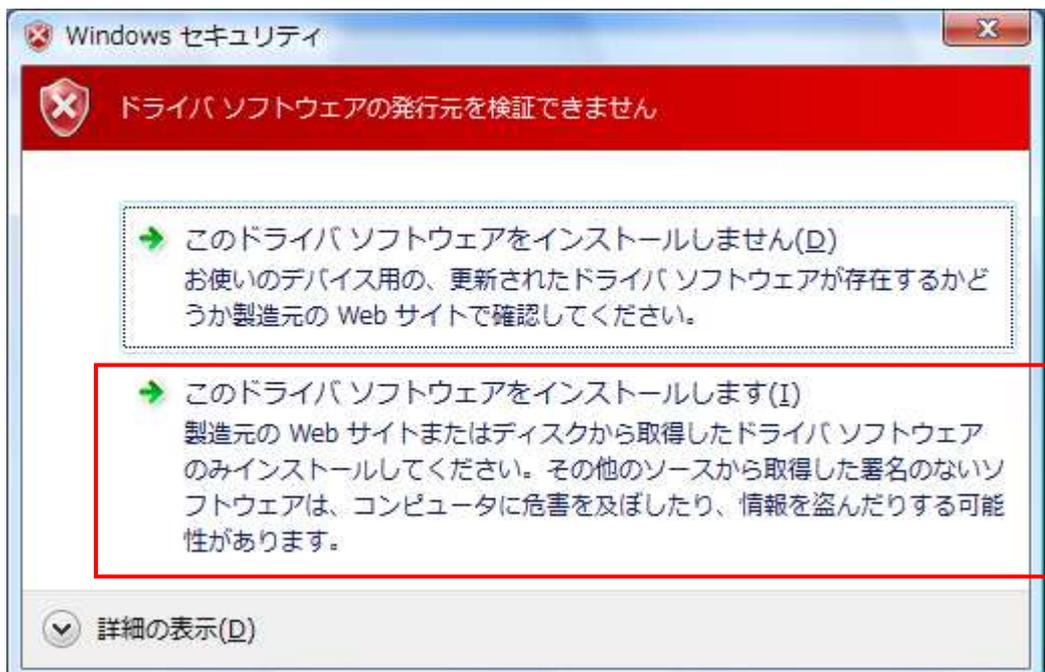


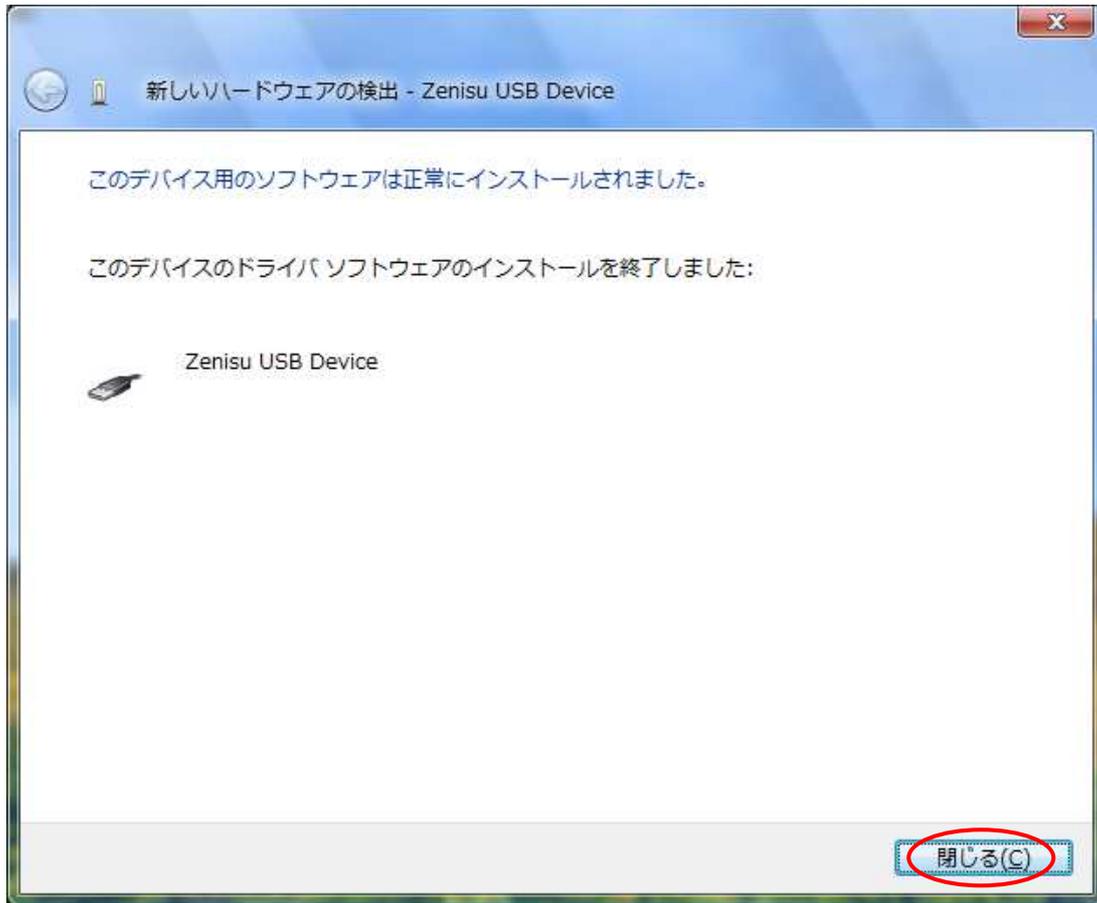
Click “Refer to the PC and search the driver software”.



Refer to the downloaded file and click the “NEXT” button.

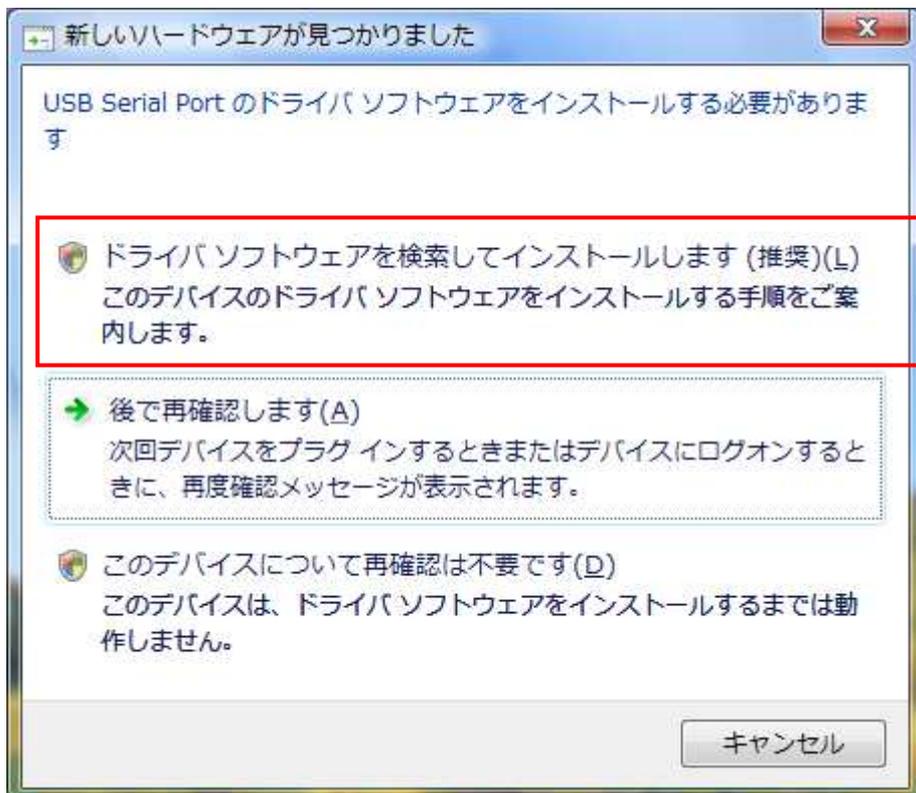
The following screen will be displayed “It can not verify the publisher of the driver software”, but there is no problem. Click “Install this driver software”.



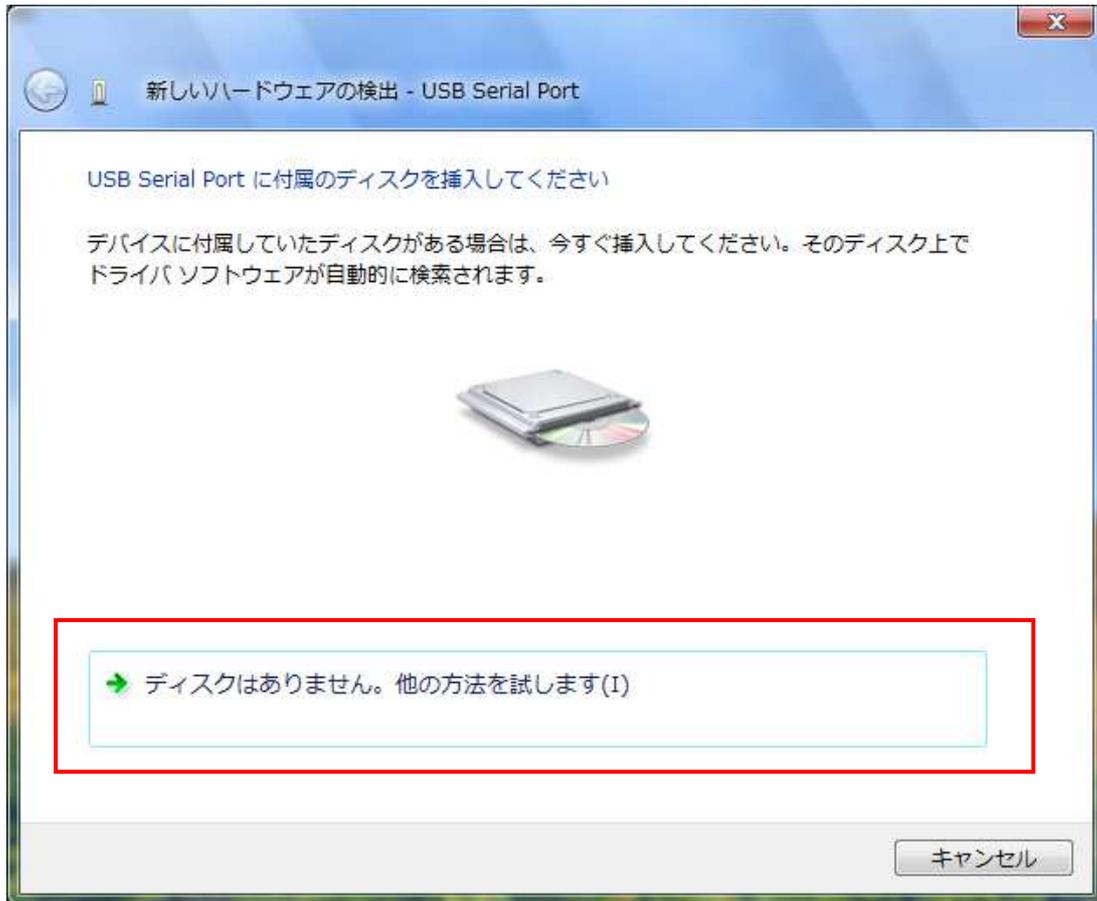


Click “Close” button.

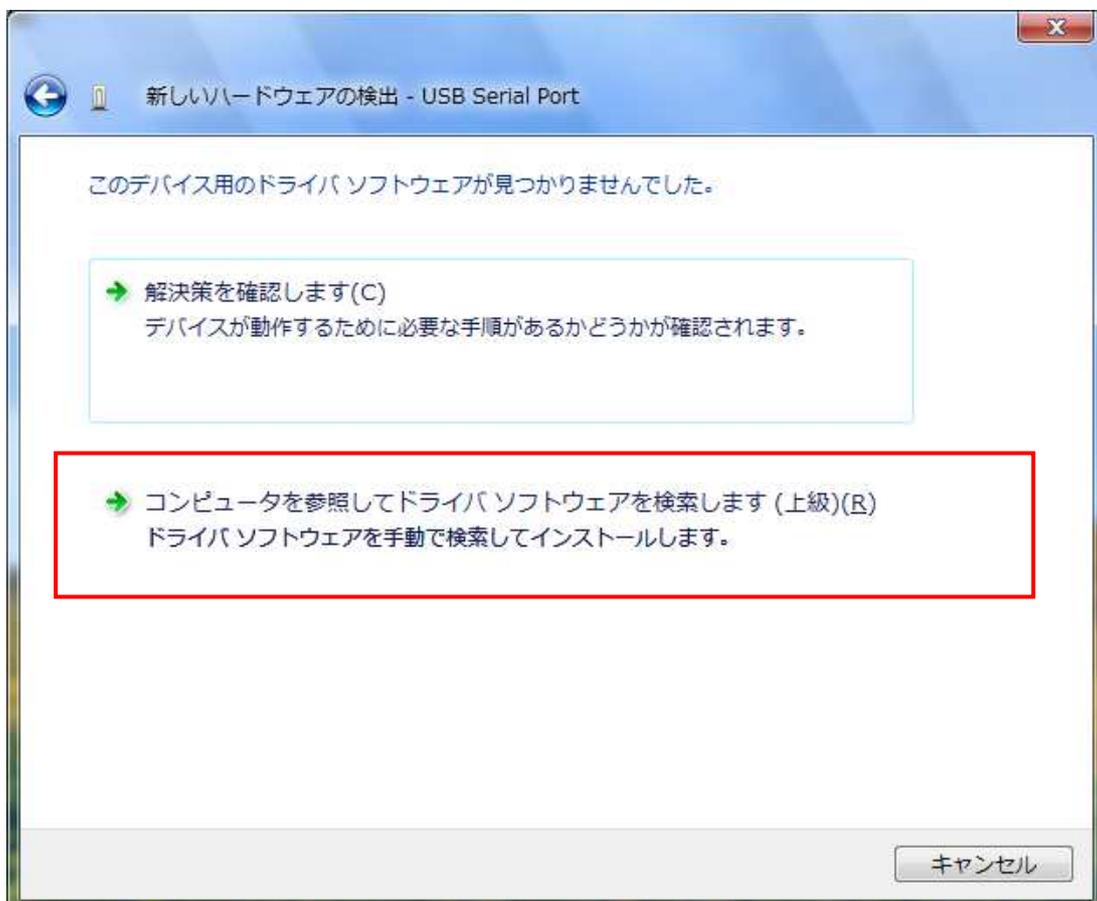
The following screen will be displayed.



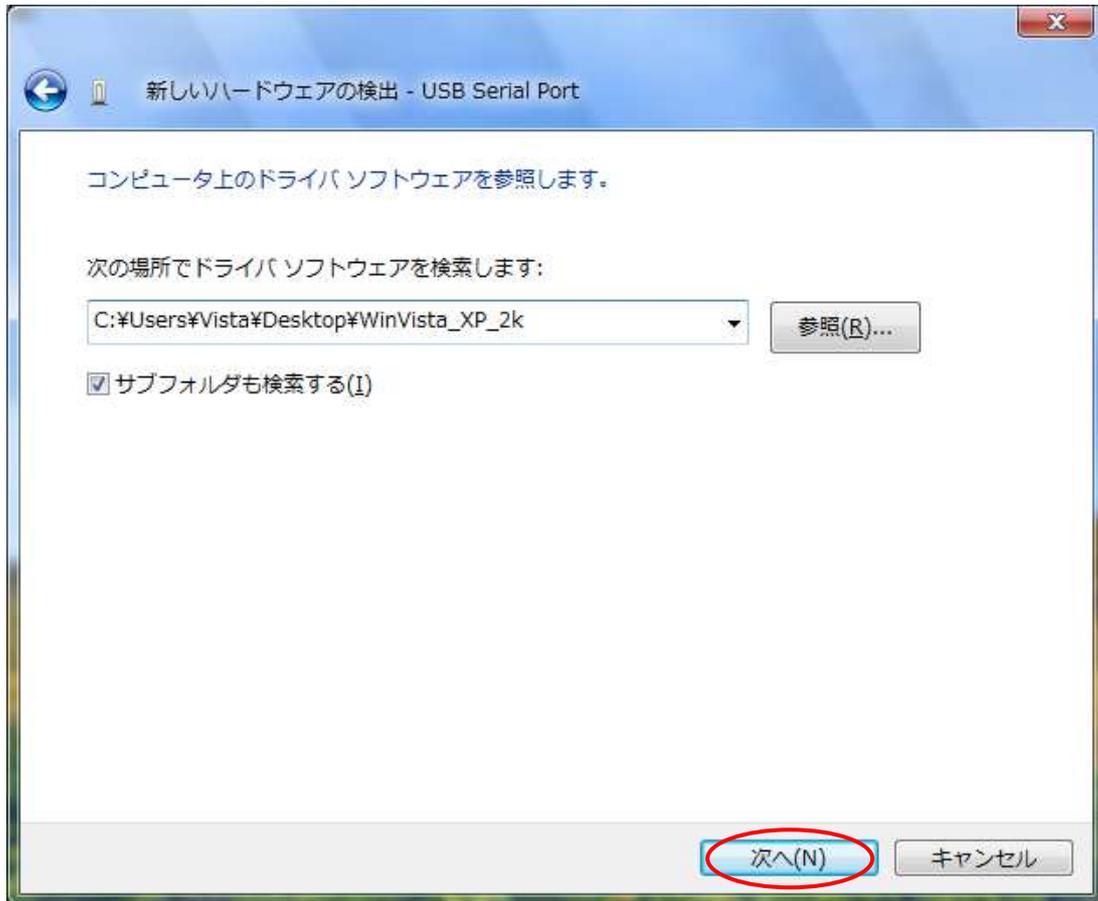
Click “Search and install driver software”.



Click “There is no disc, try other method”.

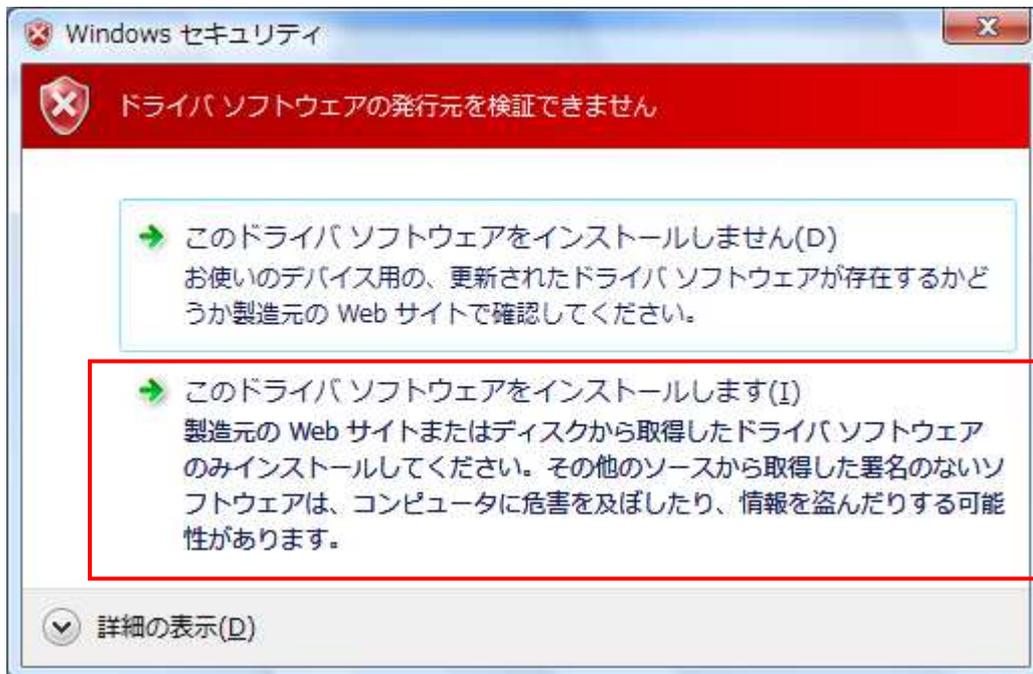


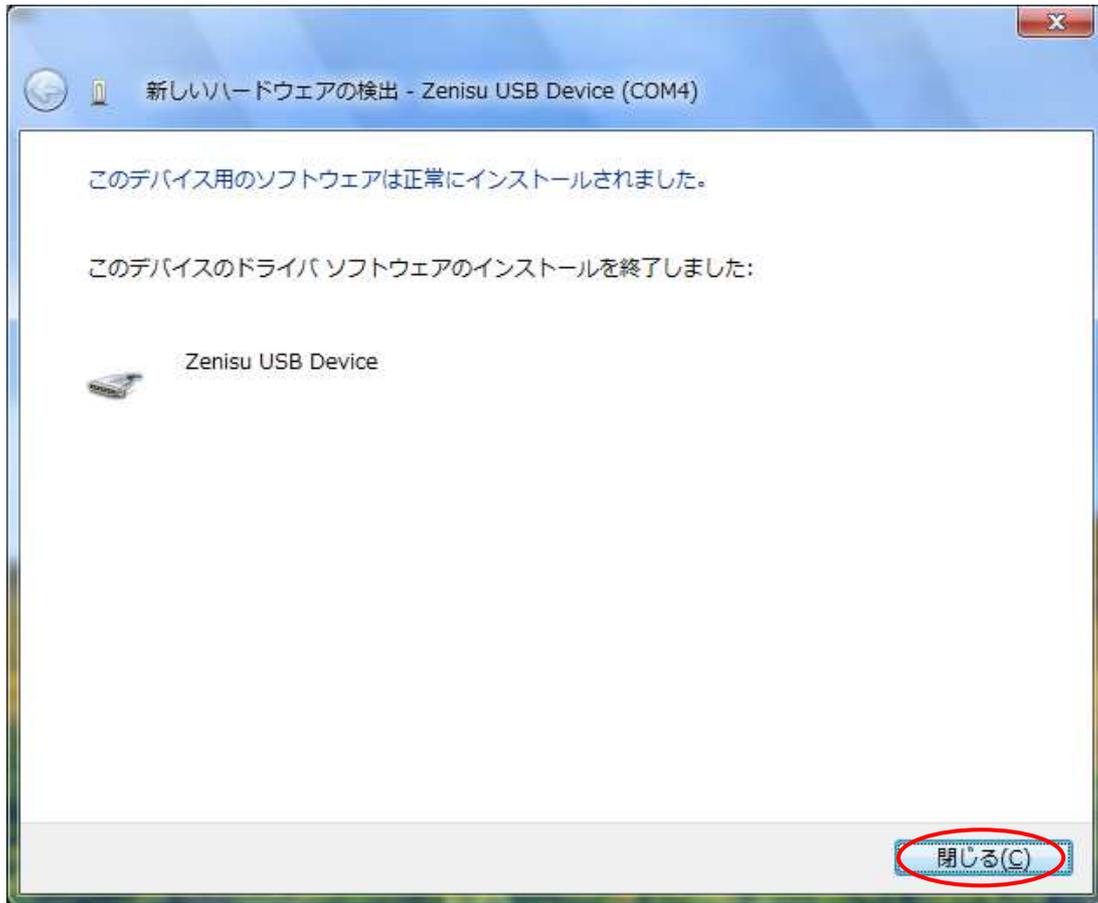
Click “Refer to the PC and search the driver software”.



Refer to the download file and click the “NEXT” button.

There is no problem. Click “Install this driver software”.





Installation is completed, click “Close” button.

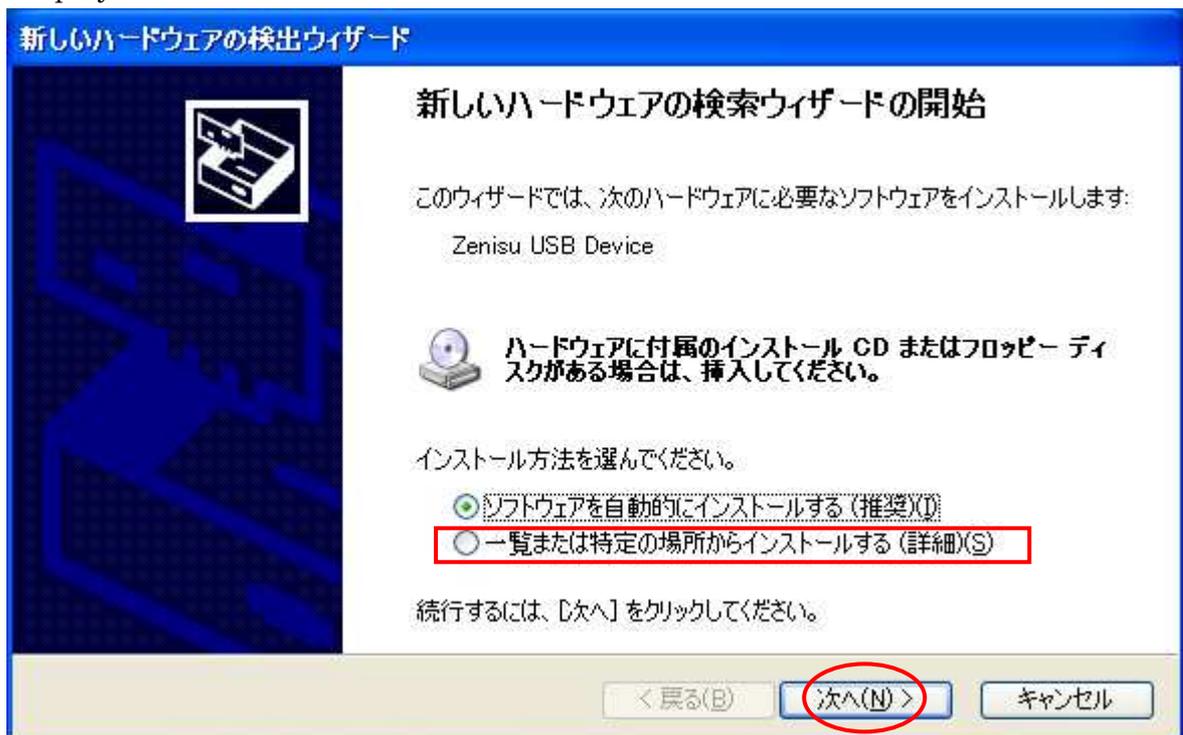
### 3.3.Windows XP/2000

In order to use this product, it is necessary to install hardware and device drivers.

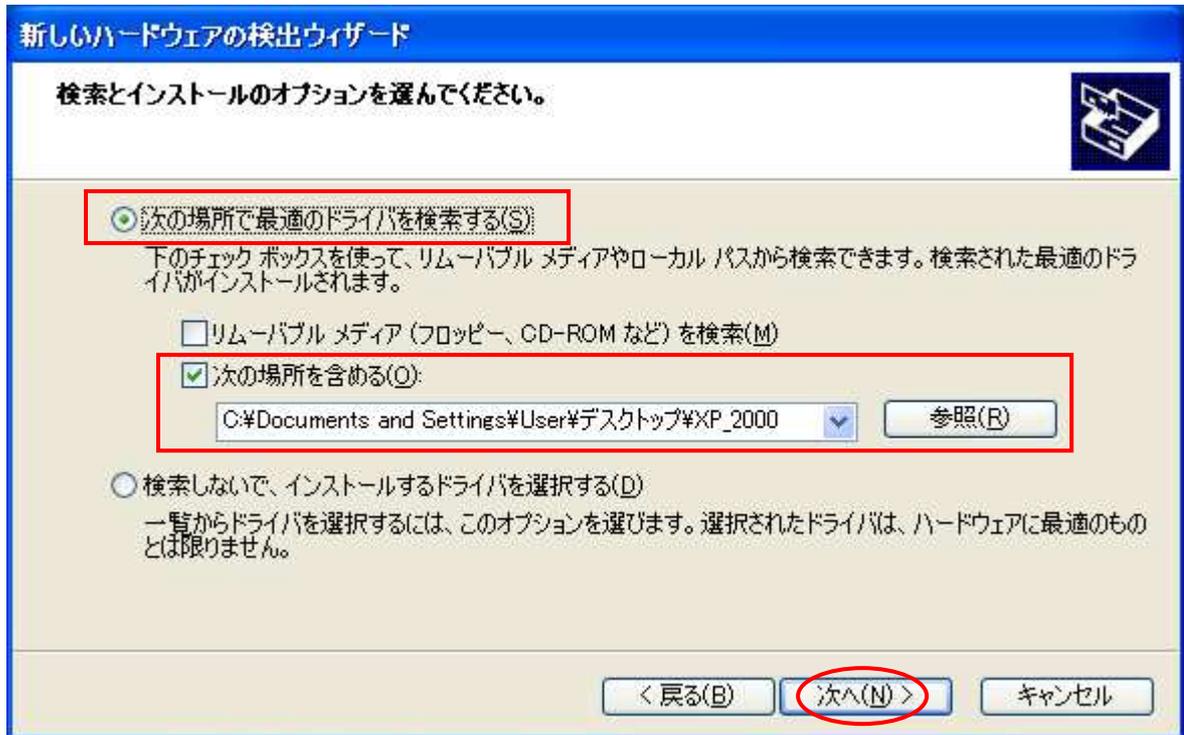
- ⑤ Turn on the power to the PC and start Windows.
- ⑥ Connect the PC and this product with USB cable.
- ⑦ Install the device driver.
- ⑧ Installation is completed.

The “Device driver installation method” is explained as below. The display of sentences may differ depending on the personal computer, but it is basically the same.

When connecting this product to the computer at first, the following screen will be displayed.

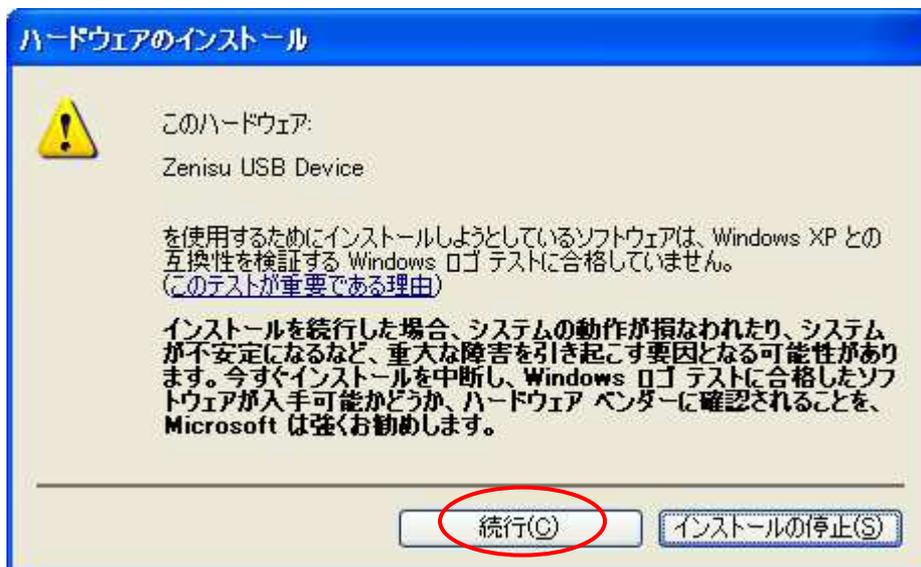


Select “Install from the list or specific location” and click the “NEXT” button.



Select “Search for the driver in the following location”, refer to the downloaded driver and click the “NEXT” button.

The following screen will be displayed, but there is no problem click “Continue” button.

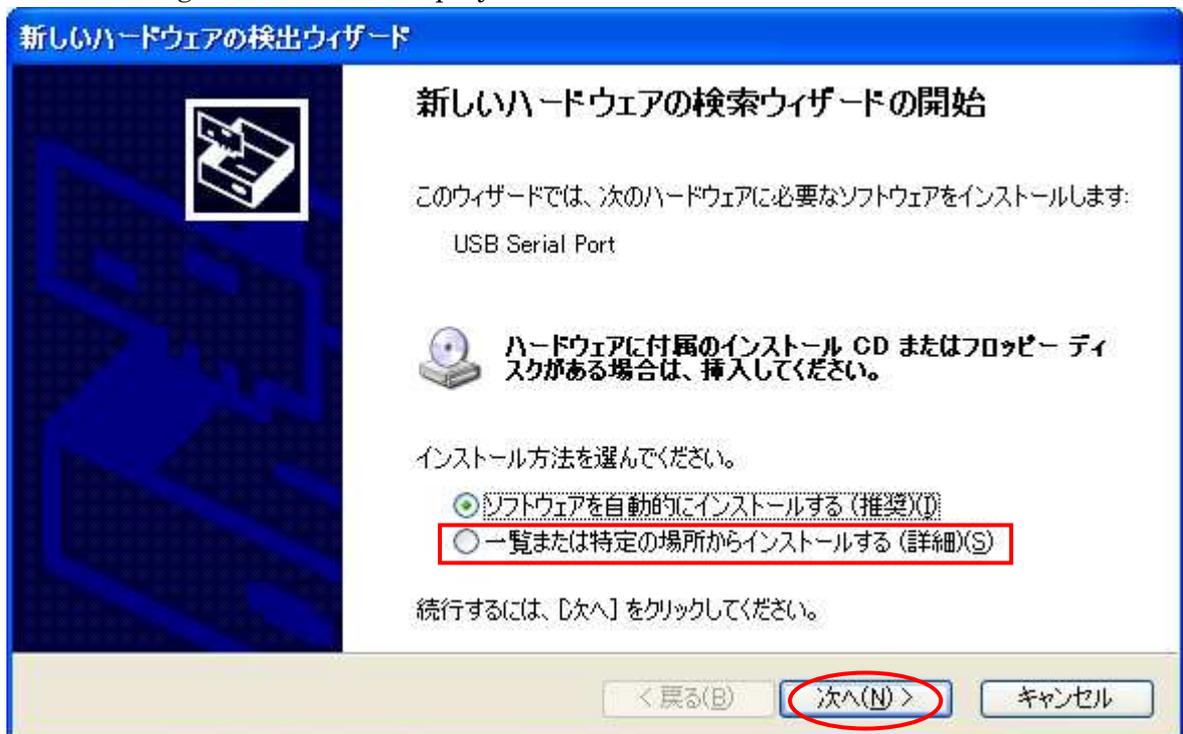


The following screen will be displayed if device driver installation is normally completed.

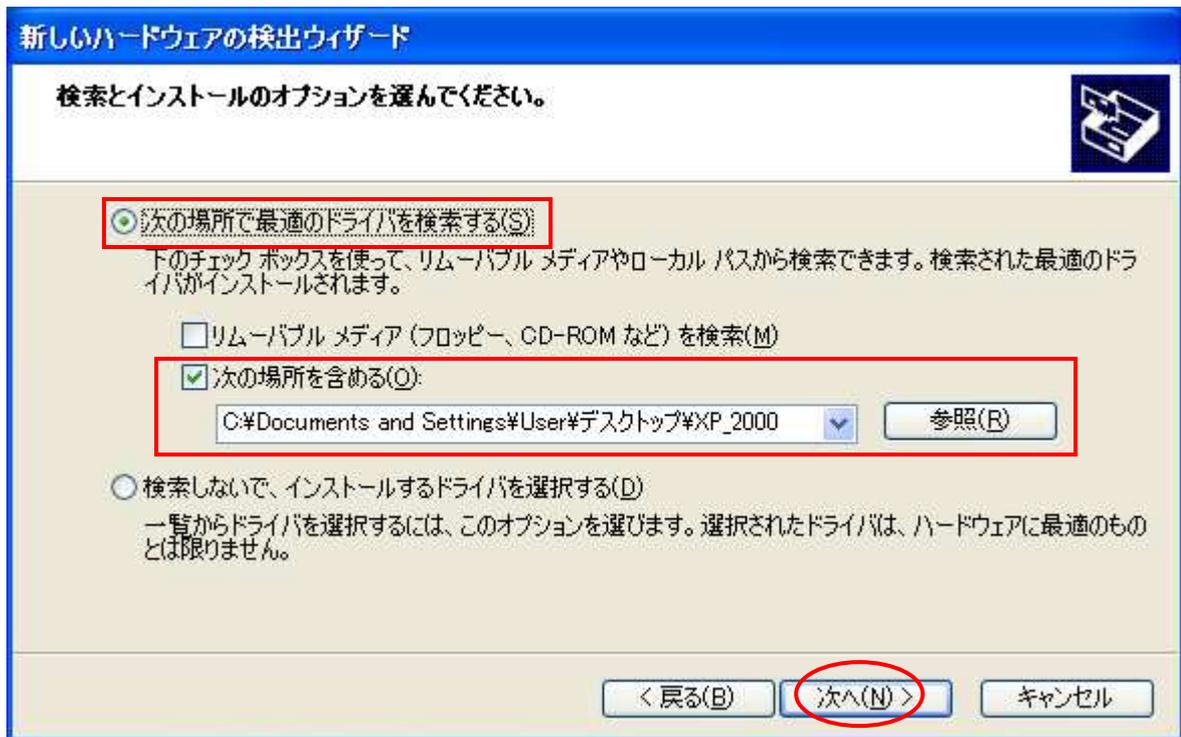


Click "Finish" button. Since it may be required to restart depending on the configuration of the PC, restart according to the instructions on the screen. Even if you connect to the computer from the next time, these screen will not be displayed.

The following screen will be displayed.

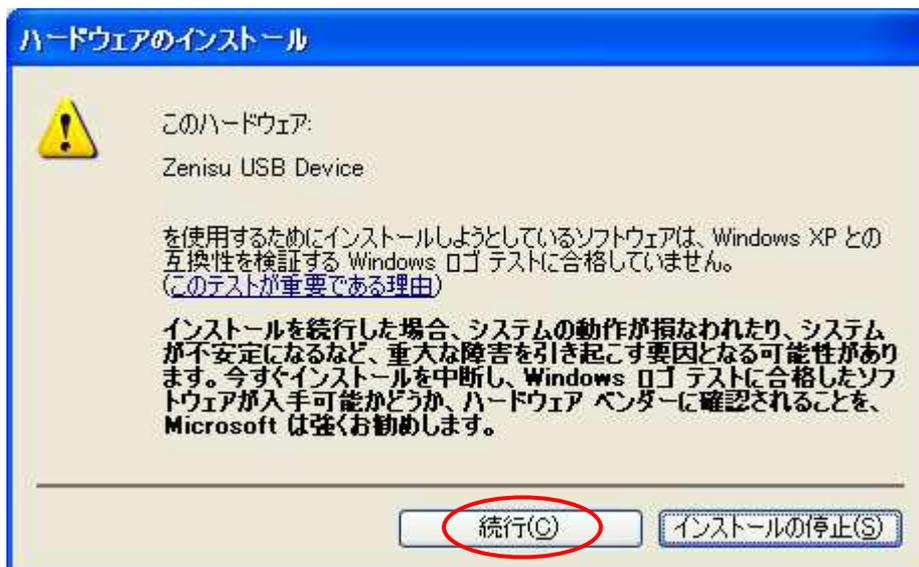


Select "Install from the list or specific location" and click the "NEXT" button.



Select “Search for the driver in the following location”, refer to the downloaded driver and click the “NEXT” button.

There is no problem, click the “Continue” button.



The following screen will be displayed if.



Click “Finish” button. Since it may be required to restart depending on the configuration of the PC, restart according to the instructions on the screen. Even if you connect to the computer from the next time, these screen will not be displayed.

## 4.Operation

### 4.1.Preparation

ZS-6224 uses API made by FTDI inc, depending on each programming language, include the following files.

Visual Basic	:D2XX_Module.bas
Visual C++	:FTD2XX.H、FTD2XX.lib
Delphi	:D2XXUnit.pas

### 4.2.Function

In order to control the relay and input the photocoupler, use the following function.

FT_Open	:Open the USB port.
FT_Close	:Close the USB port.
FT_SetBitMode	:Set the I/O of the 8-bit port.
FT_SetBaudRate	:Set the rewrite time of 8 bits.
FT_Write	:Turn relay ON/OFF.
FT_GetBitMode	:Load the photocoupler.

#### 4.2.1. FT\_Open

➤ Function

Open the USB port and initialized.

➤ Format

FT\_Open (int iDevice, FT\_HANDLE \*ftHandle)

iDevice :Set "0".

ftHandle :If FT\_Open is successful, the handle number will be returned.

Use this handle number when using other functions.

➤ Return value

FT\_OK :In case of "0", success.

Other than "0" :Error

#### 4.2.2. FT\_Close

➤ Function

Close the USB port and execute driver termination processing.

➤ Format

FT\_Close (FT\_HANDLE ftHandle)

ftHandle :Set the handle number.

➤ Return value

FT\_OK :In case of "0", success.

Other than "0" :Error

### 4.2.3. FT\_SetBitMode

➤ Function

Set of I/O of 8 bits.

➤ Format

FT\_SetBitMode (FT\_HANDLE ftHandle, UCHAR ucMask, UCHAR ucMode)

ftHandle :Set the handle number.

ucMask :Set HEX(0F), 0:Input 1:Output

In the ZS-6224, the upper 4 bits are input to the photocoupler and lower 4 bits are set to the relay output. Since it is set "0F".

ucMode :Set "1"

➤ Return value

FT\_OK :In case of "0", success.

Other than "0" :Error

### 4.2.4. FT\_SetBaudRate

➤ Function

Set the rewrite time of output data.

➤ Format

FT\_SetBaudRate (FT\_HANDLE ftHandle, DWORD dwBaudRate)

ftHandle :Set the handle number.

DwBaudRate :Set "9600"

When set to 9600, data is rewritten at  $1 / (9600 \times 16) = 6.51 \mu\text{s}$  cycle. If there is no data in the buffer, the previous output is continued.

➤ Return vale

FT\_OK :In case of "0", success.

Other than "0" :Error

#### 4.2.5. FT\_Write

➤ Function

Set the relay ON/OFF.

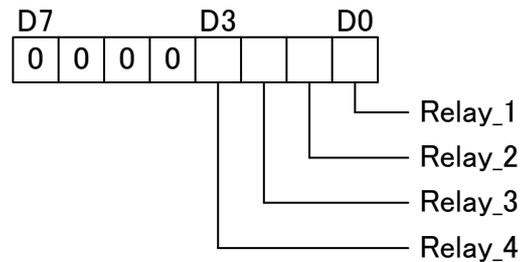
➤ Format

FT\_Write (FT\_HANDLE ftHandle, LPVOID lpBuffer, DWORD dwBytesToWrite, LPDWORD lpdwBytesWritten)

ftHandle :Set the handle number.

lpBuffer :Set "1" when the relay is ON, "0" is OFF, and execute Byte output.

Bit assignments are as follows.



dwBytesToWrite :Set "1".

lpdwBytesWritten :Set "1".

➤ Return value

FT\_OK :In case of "0", success.

Other than "0" :Error

#### 4.2.6. FT\_GetBitMode

➤ Function

Load photocoupler

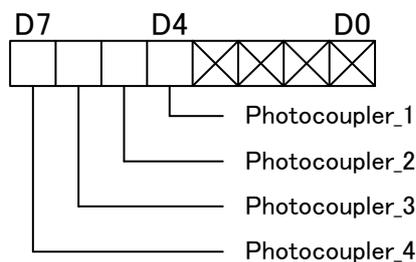
➤ Format

FT\_Read (FT\_HANDLE ftHandle, PCHAR pucMode)

ftHandle :Set the handle number

pucMode :Set "1" when the photocoupler is driving, "0" is not driving.

Bit assignments are as follows.の割り当ては以下の通りです。



➤ Return value

FT\_OK :In case of "0", success.

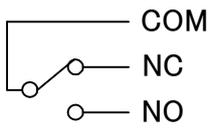
Other than "0" :Error

## 5.Connector

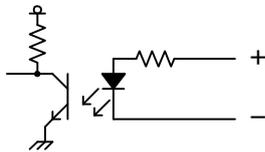
Connector (57LE-40240-7700-FA)

Signal	Pin No.		Signal
Relay 1_COM	1	13	Relay 3_COM
Relay 1_NO	2	14	Relay 3_NO
Relay 1NC	3	15	Relay 3_NC
Relay 2_COM	4	16	Relay 4_COM
Relay 2_NO	5	17	Relay 4_NO
Relay 2_NC	6	18	Relay 4_NC
GND	7	19	GND
Photocoupler 1_IN+	8	20	Photocoupler 1_IN-
Photocoupler 2_IN+	9	21	Photocoupler 2_IN-
Photocoupler 3_IN+	10	22	Photocoupler 3_IN-
Photocoupler 4_IN+	11	23	Photocoupler 4_IN-
GND	12	24	GND

Relay:



Photocoupler:



## 6.Warranty

If it fails during normal use, we will repair it free of charge as described in this warranty as below.

- 1) During the warranty period which is one year from the date of purchase, we will repair it free of charge in case of malfunction in accordance with instruction manual.
- 2) It will be charged for extra in the following case, even during warranty period.
  - Incorrect usage or failure or damage caused by carelessness.
  - Failure or damage caused by improper repair or remodeling.
  - Failure or damage caused by external factors such as fire, earthquake, other natural disasters, abnormal voltage and so on.
  - Replacement of consumable parts.
  - Change of power supply and voltage.
- 3) This warranty provision is effective only in Japan