

ZS-6222 Series
USB-PIO Adapter

User's Manual



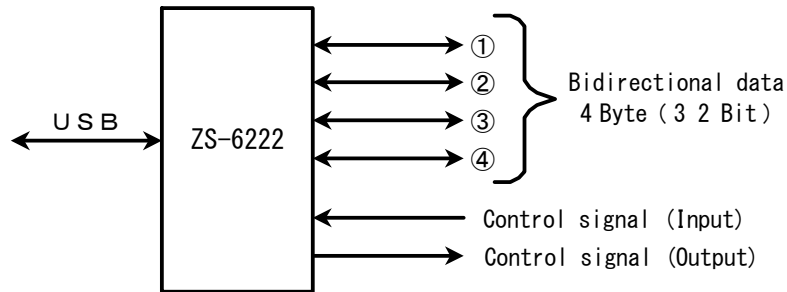
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1. Outline

ZS-6222 is a unit that communicates parallel signals and USB. It is possible to be connected to a PC with a USB interface and control instruments of BCD output, device control, data collection and so on.



2. Feature

- ① It is possible to be easily controlled with a laptop computer.
- ② There are 4 ports (8bits/port) for parallel signals, and I/O can be selected with each port.
- ③ In addition to data, control lines are prepared that it can be synchronized with external device.

3. Specification

3.1. Operation environment

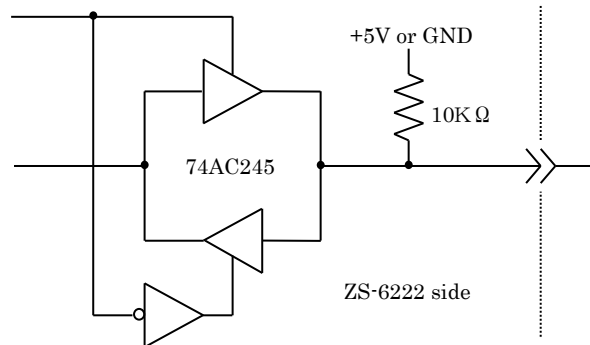
- PC : IBM PC/AT compatible machine (USB port required)
- OS : Microsoft Windows 2000 , XP , Vista

3.2.USB

Compliant with USB2.0

3.3. Parallel port

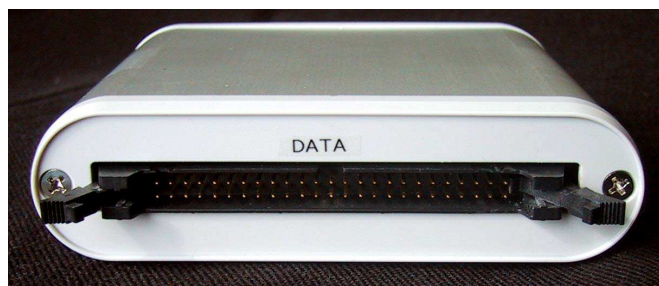
- Port numbers : 4 port (8bit/port)
- I/O level : Fan-in = 1
Fan-out = 10
Pull-up resistor 10KΩ, Pull-down is available



3.4. Product specification

Model	ZS-6222P	ZS-6222S
Feature	Printed circuit type	Small case built-in type
Data connector	50-core flat cable	50-core flat cable
Power supply	DC4.75V to 5.25V 100mA or less	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	150 × 100 × 30H	150 × 100 × 30H
Accessory	Data connector FAS-5001-2101-0BF DC power cable	Data connector FAS-5001-2101-0BF

3.5. Appearance



4. Install

4.1. Download device driver

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

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

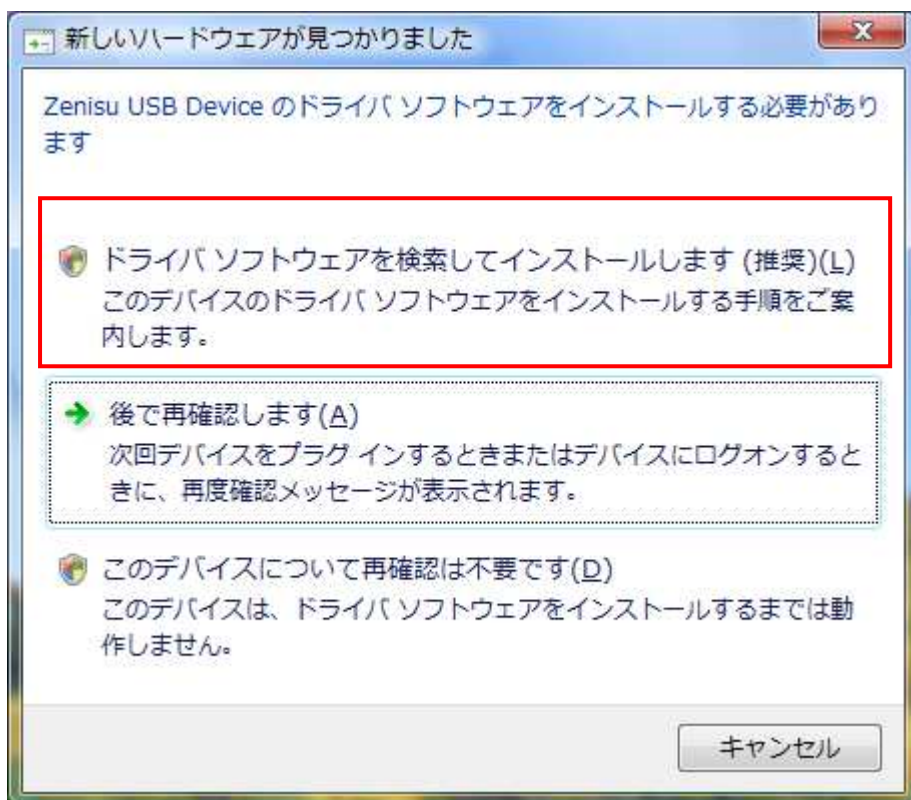
4.2. Windows Vista

In order to use this product, It is necessary to install hardware and device driver by following procedure at first.

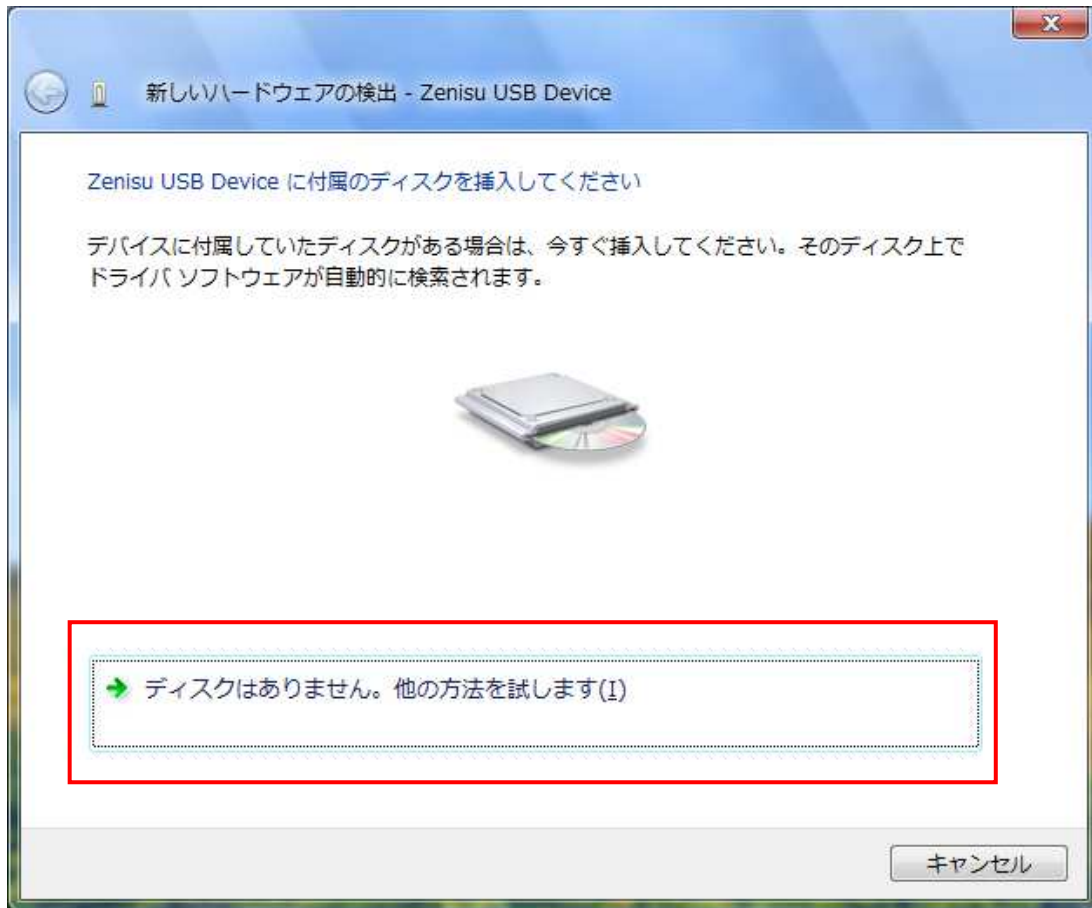
- ① Turn on the power to the PC and start Windows.
- ② Connect this product and PC with a USB cable.
- ③ Install the device driver.
- ④ Complete the installation.

Device driver installation method is explained below.

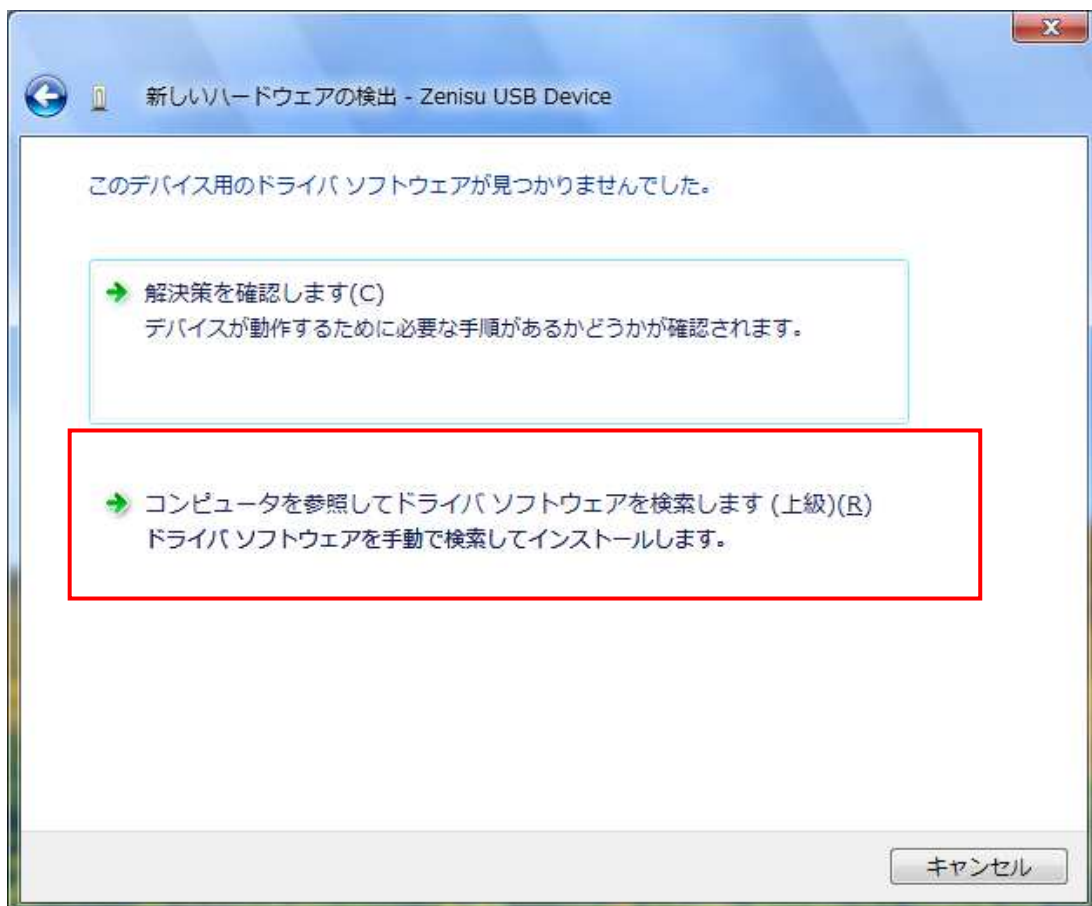
The following screen will be displayed when connecting this product to the PC at first.



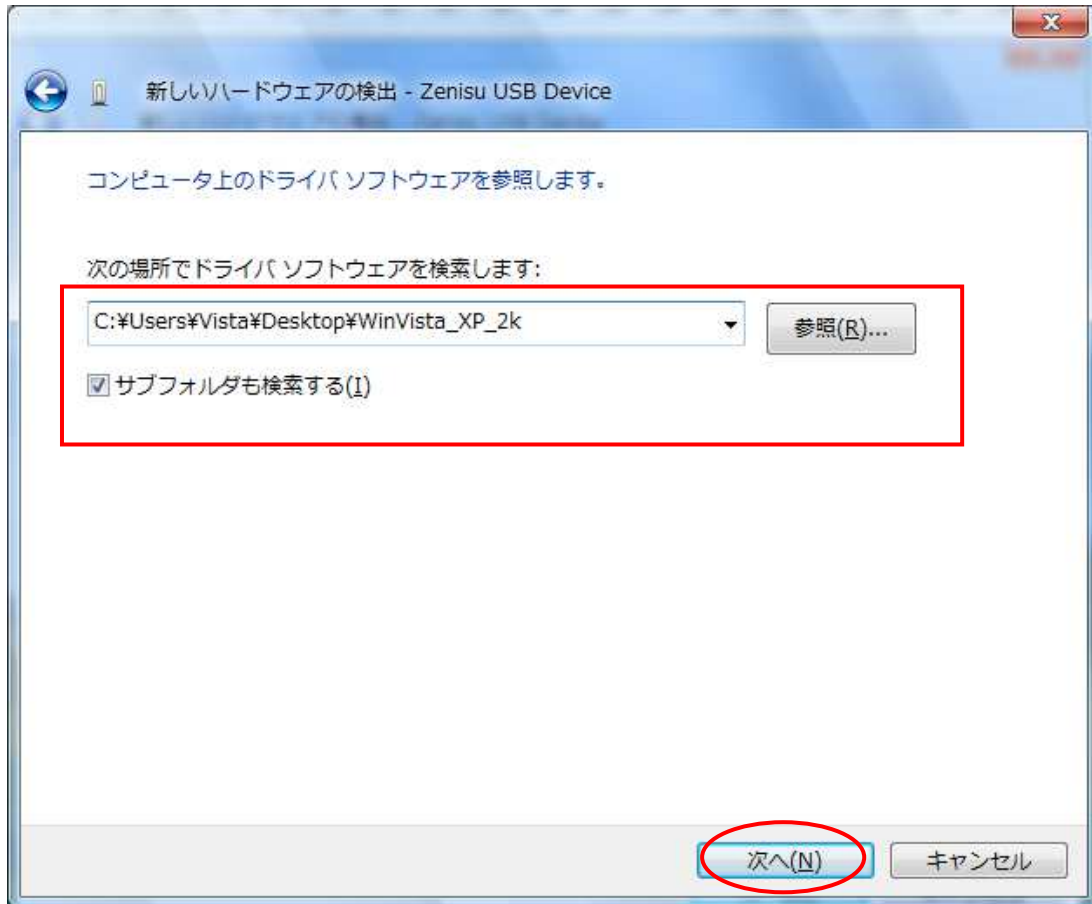
Click “Search and install driver software”.



Click "Try other method".

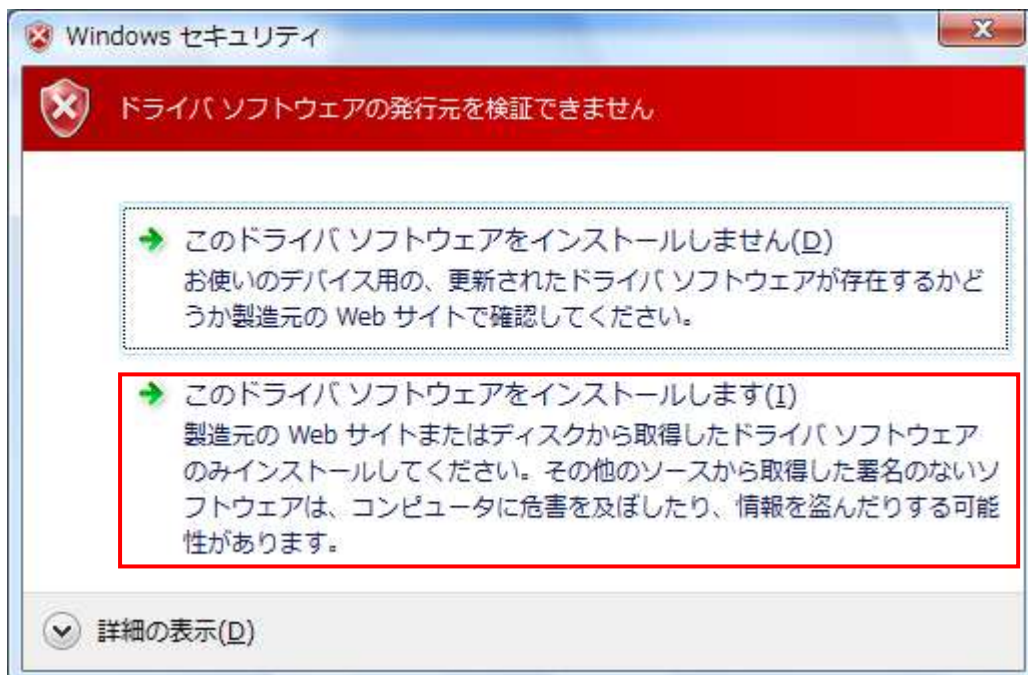


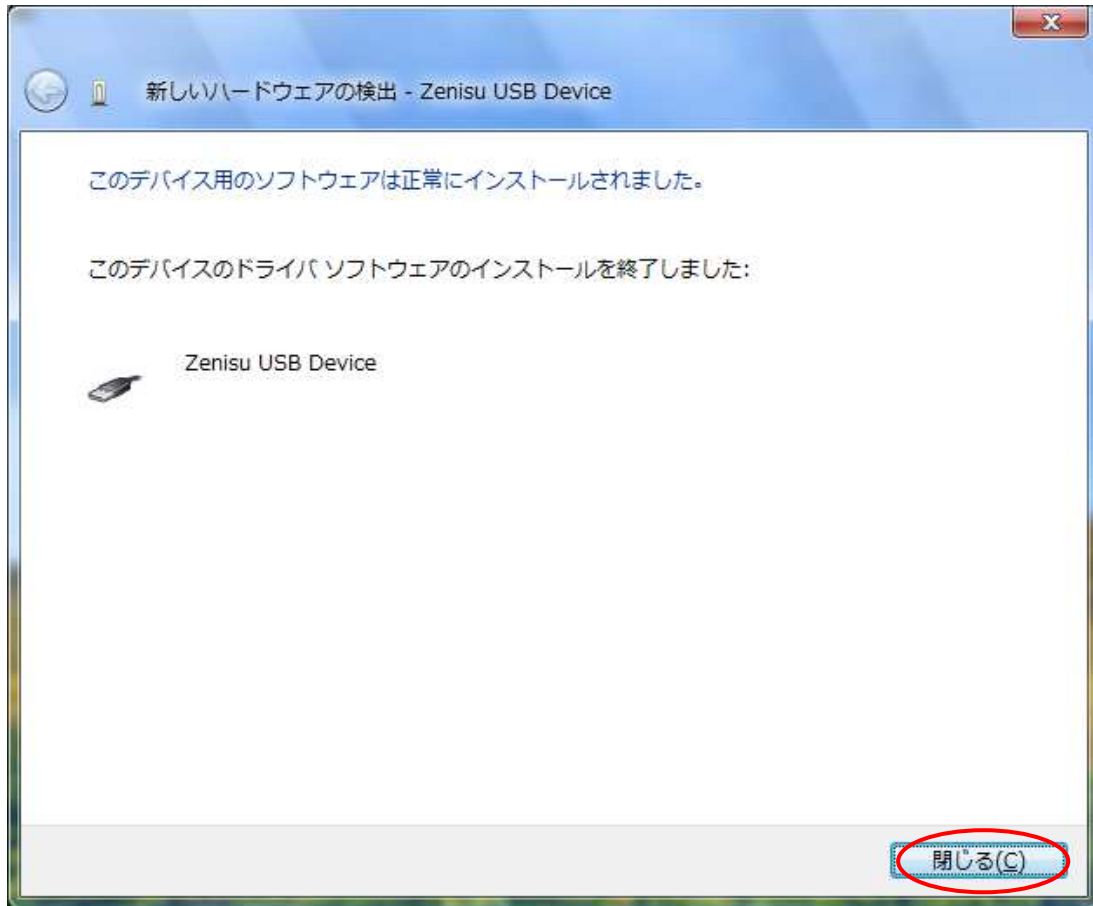
Click "Search the computer for driver software".



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

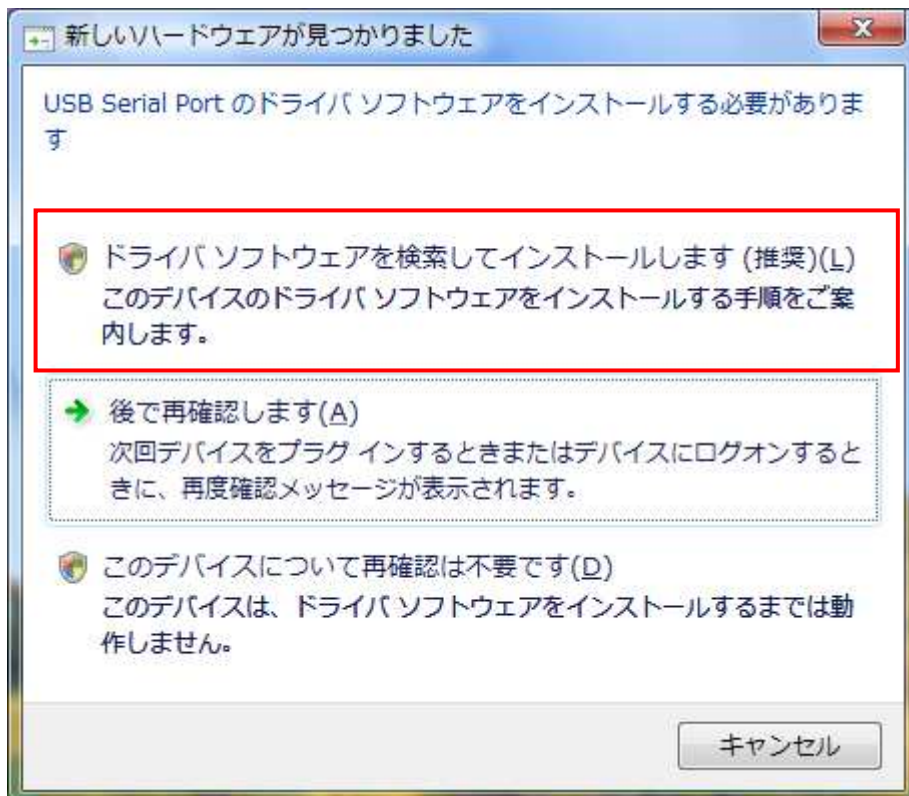
It is displayed “Issuer of driver software can not be verified”, but there is no problem. Click “Install this driver software”.



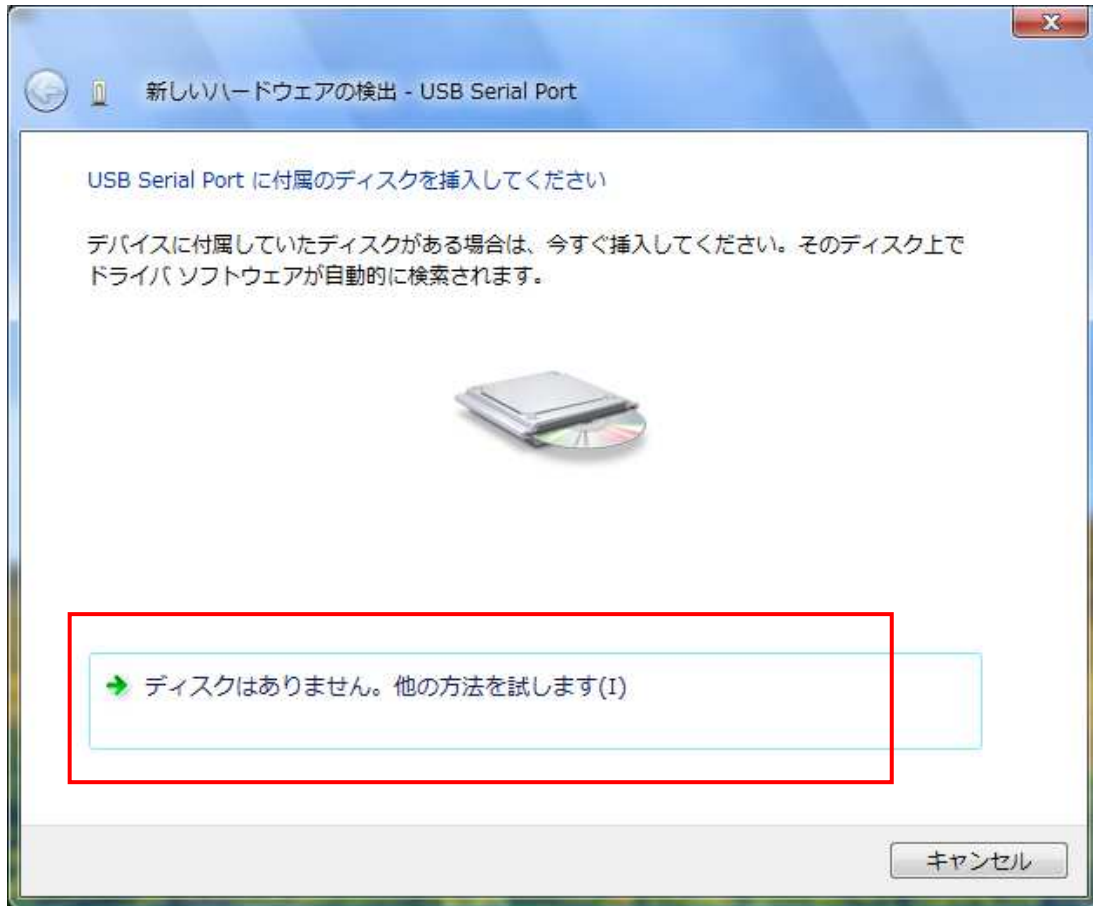


Click “Close” button.

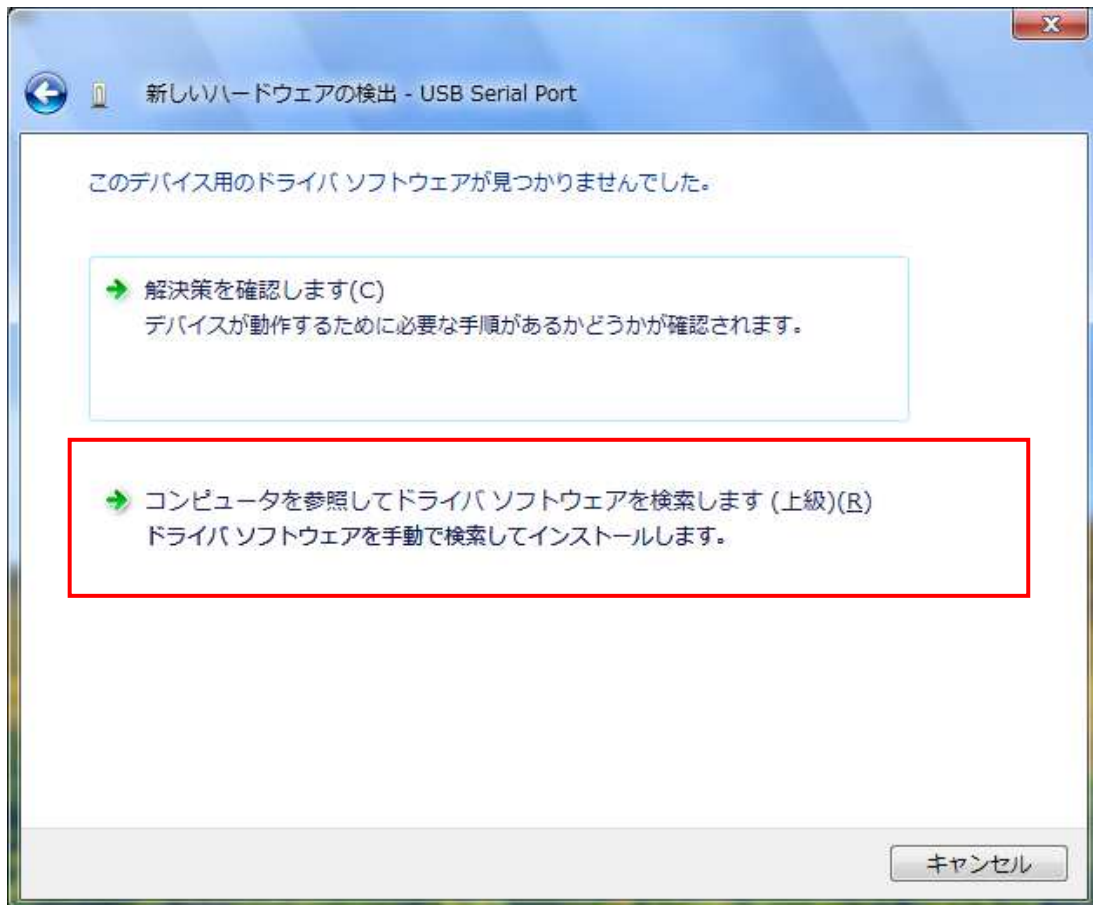
The following screen will be displayed.



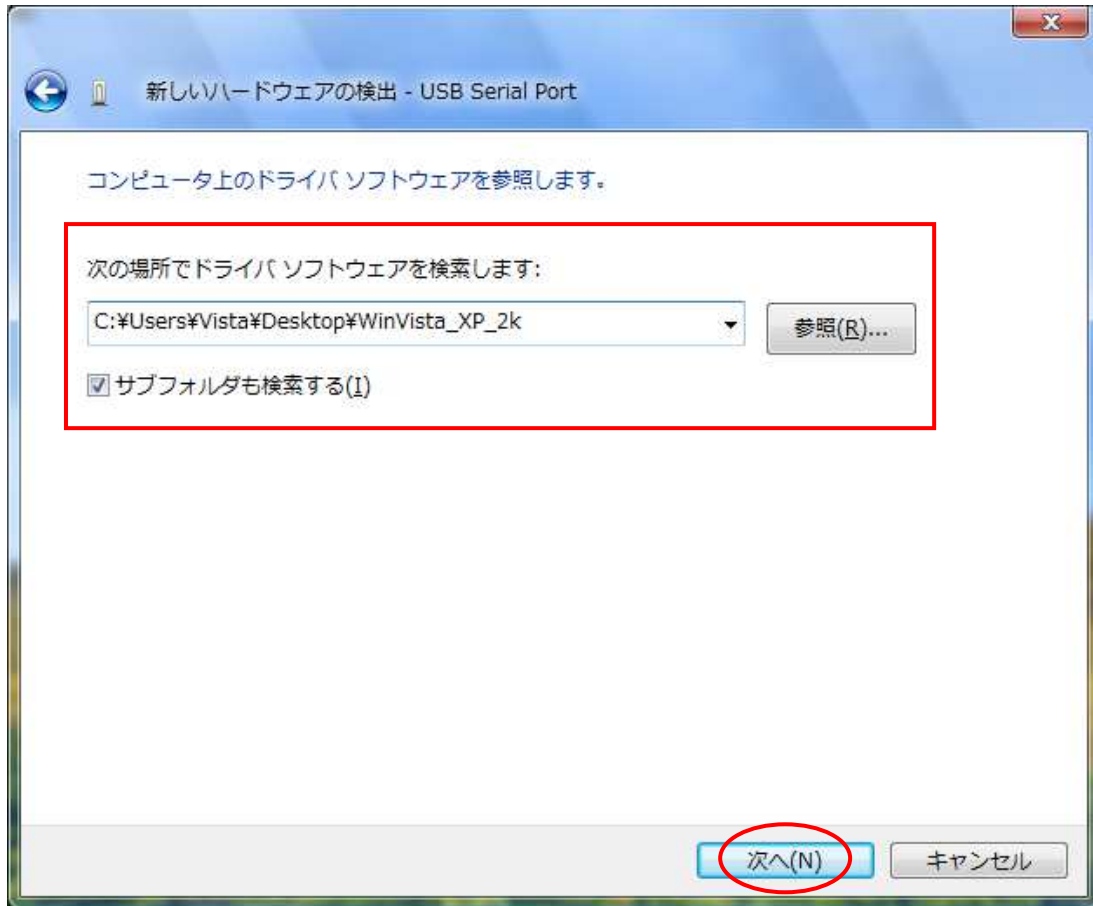
Click “Search and install driver software”.



Click “Try other method”.



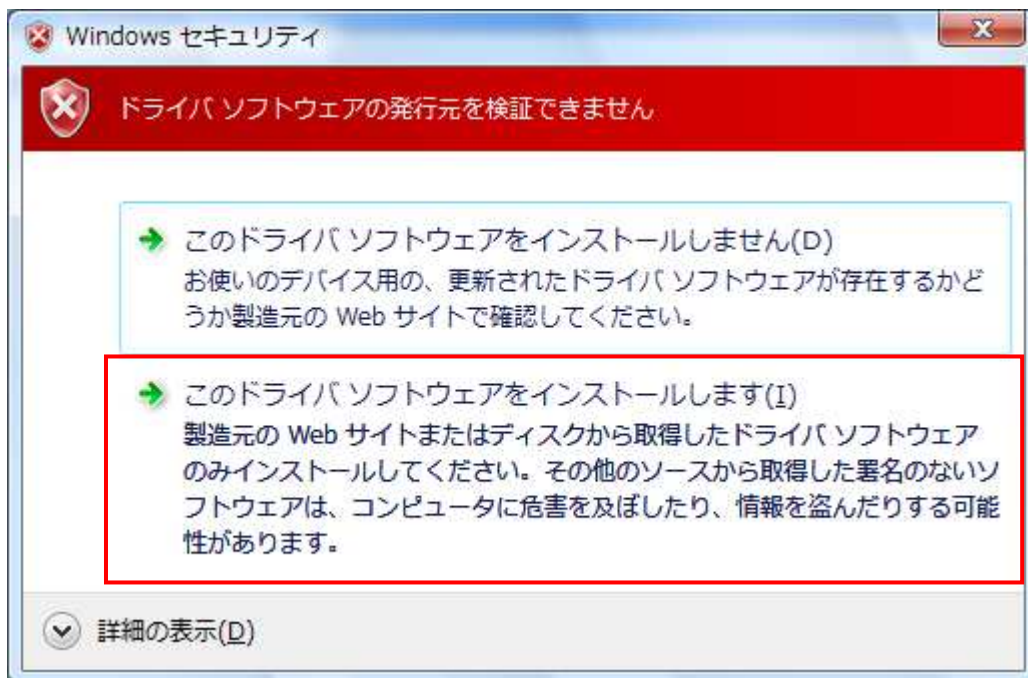
Click “Refer to the computer and search for driver software”.

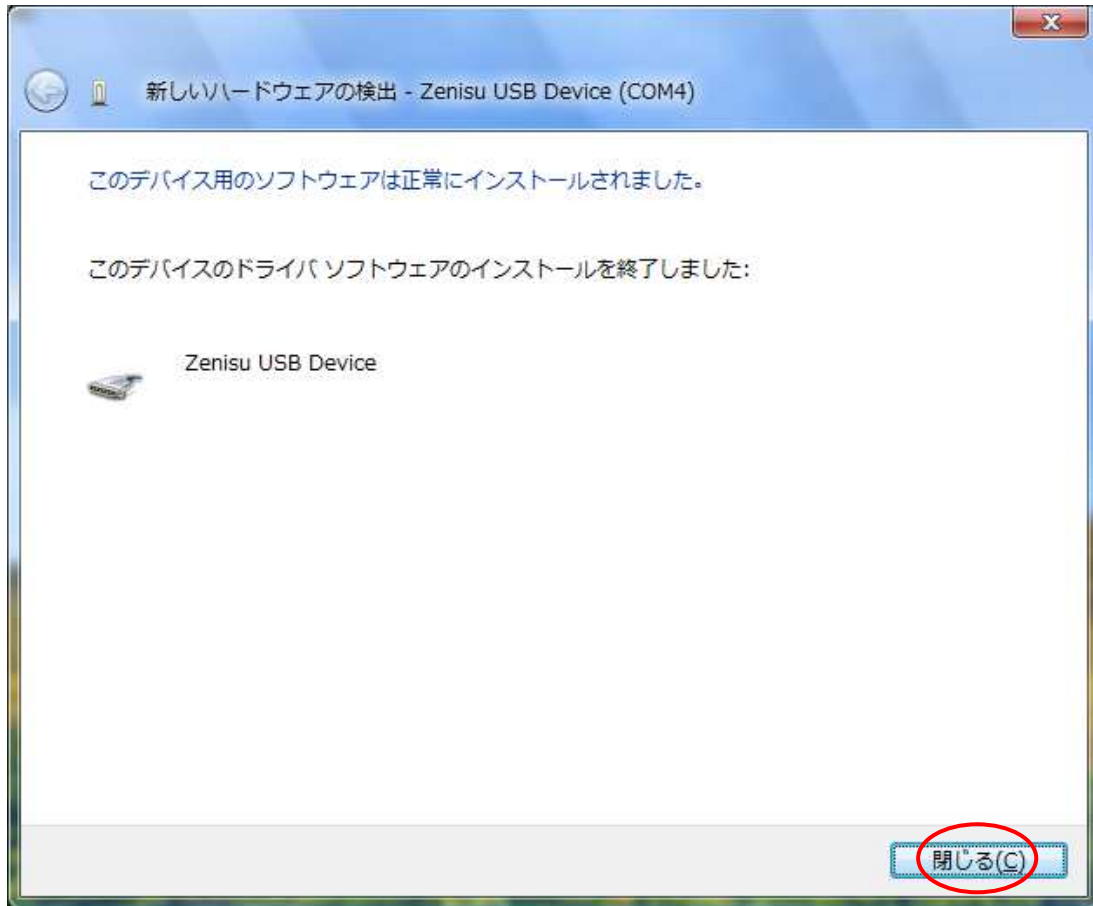


Refer to the downloaded file and click “NEXT” button.

It will be displayed but there is no problem.

Click “Install this driver software”.





Click “Close” button.

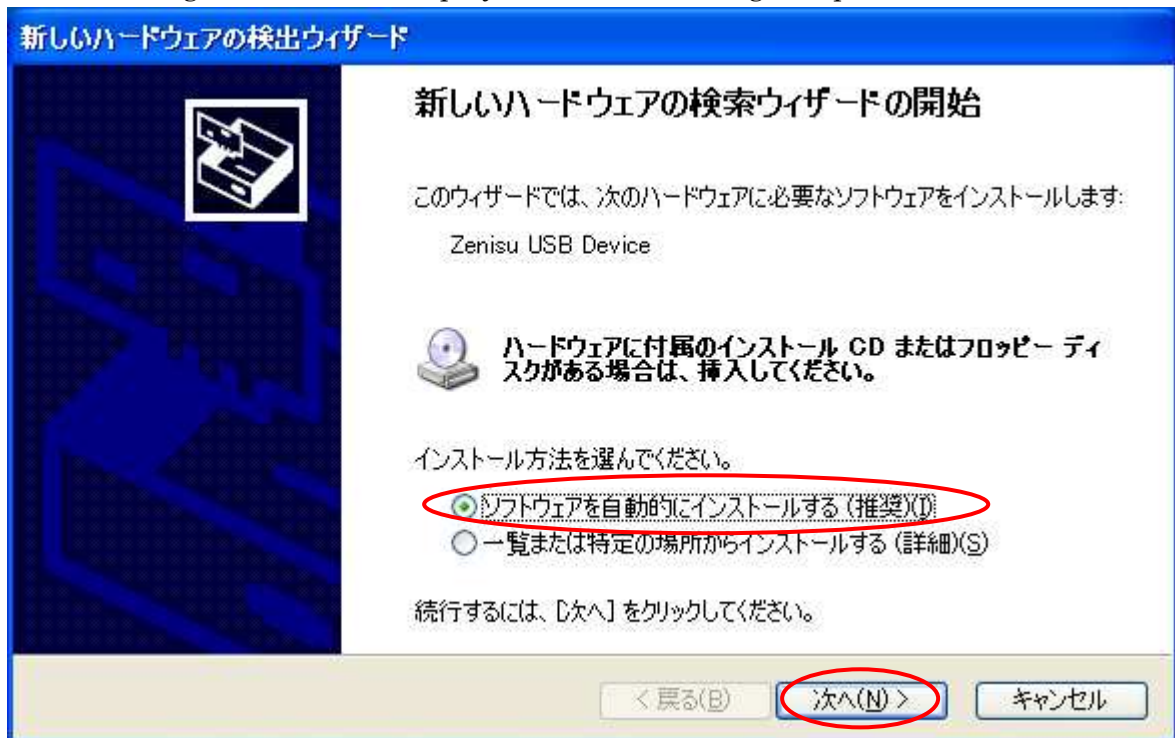
4.3. Windows XP/2000

In order to use this product, it is necessary to install hardware and device driver at first.

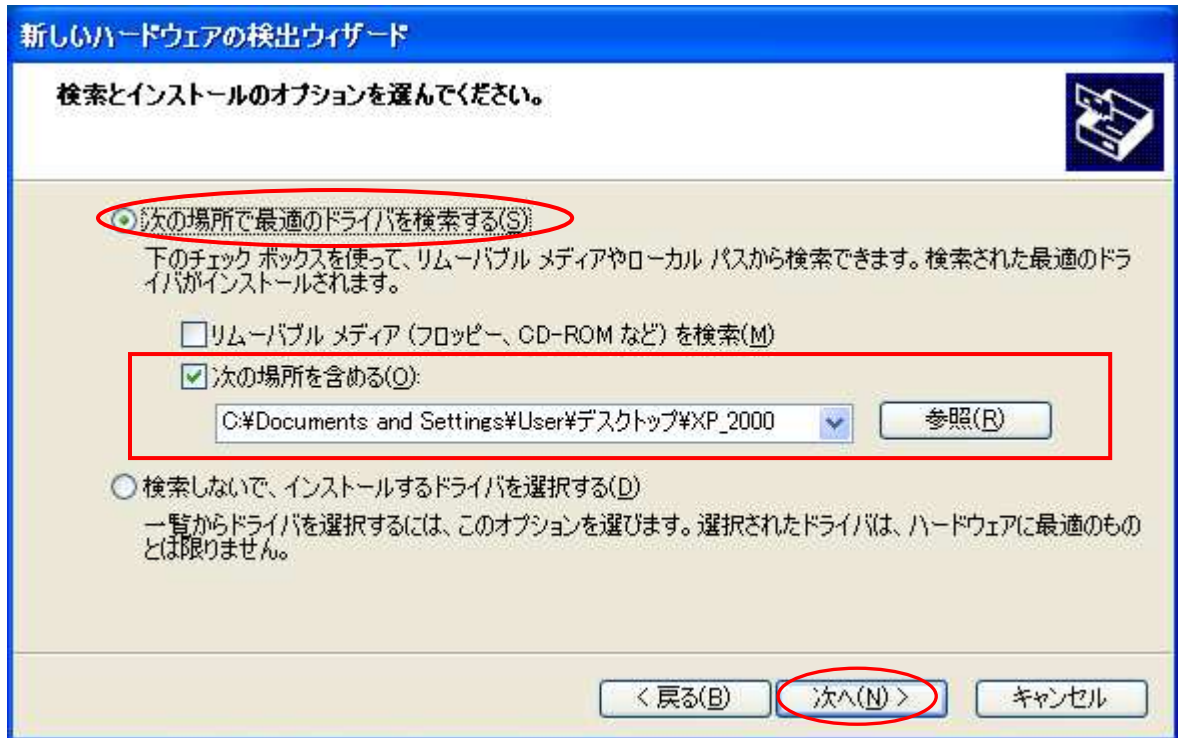
- ① Turn on the power to the PC and start Windows.
- ② Connect this product and PC with a USB cable.
- ③ Install the device driver.
- ④ Complete the installation.

Device driver installation method is explained below.

The following screen will be displayed when connecting this product to the PC at first.



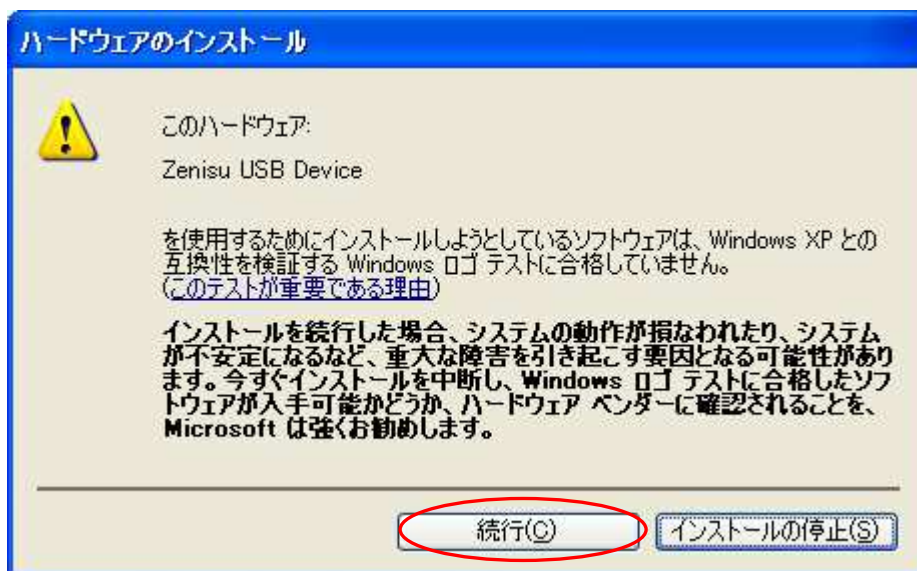
Select "Install from a list or specific location" and click the "NEXT" button.



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

The following screen will be displayed (Only for XP).

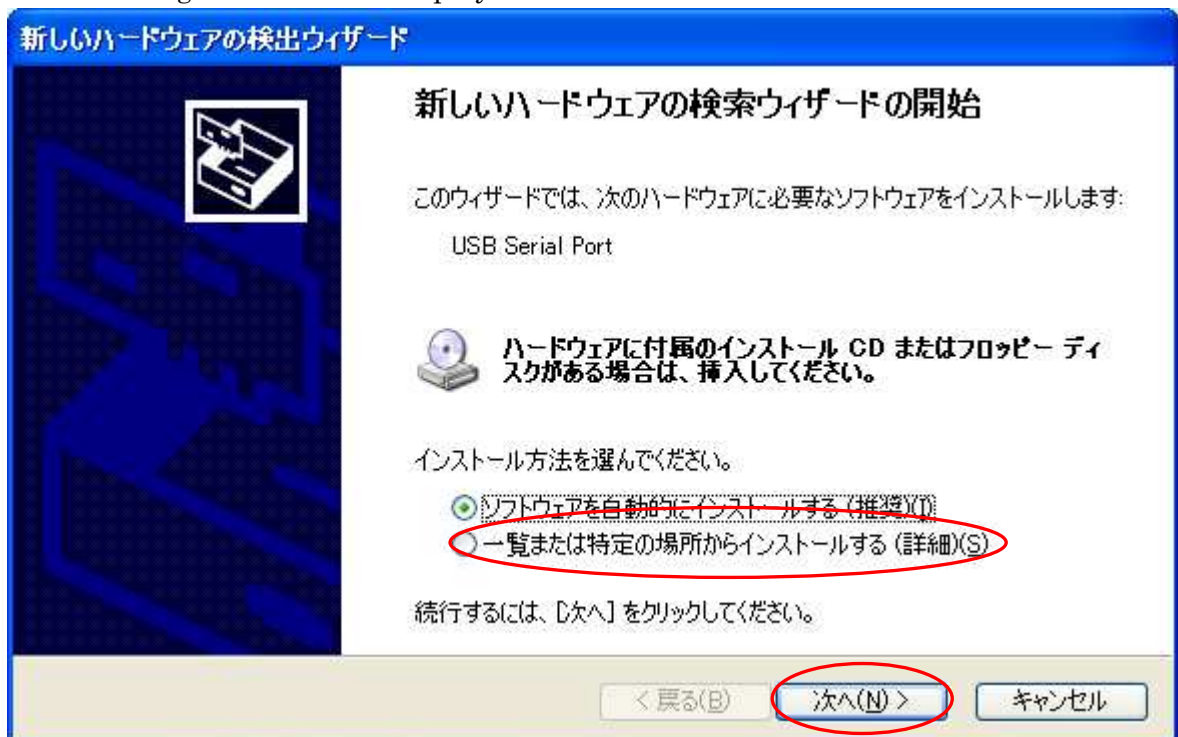
It is displayed "It has not passed Windows logo test to verify compatibility with Windows XP", but there is no problem. Click "Continue" button.



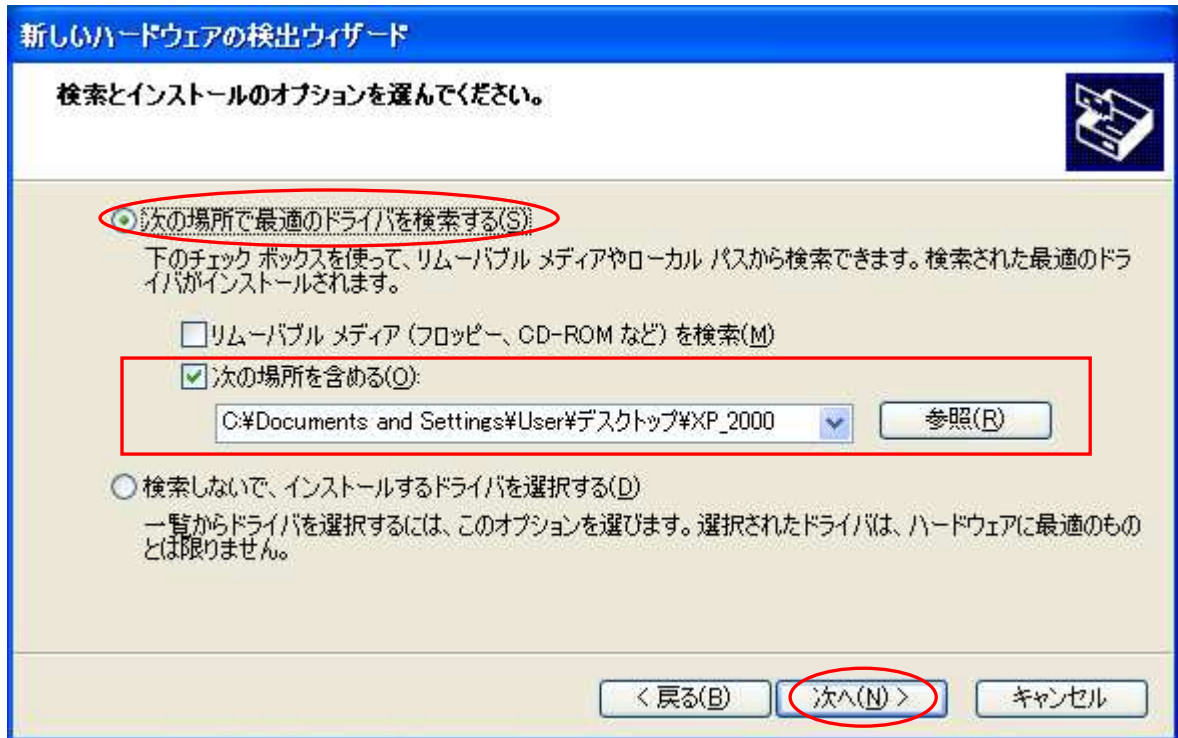


Click “Finish” button. After that, it may be asked to reboot according to the configuration of the PC. In that case restart according to the instructions on the screen.

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 ”NEXT” button.

There is no problem, click “Continue” button.





Click “Finish” button. After that, it may be asked to reboot according to the configuration of the PC. In that case restart according to the instructions on the screen.

5. Operation

5.1. Transfer data method

① Communication of the ZS-6222 is executed with the COM port. “Zenisu USB Device (COM x)” will be displayed in “Port(COM and LPT” column of the device manager of each OS when install the device driver. “x” is a number and the value differs depending on the personal computer. When creating a program, please open it according to the displayed COM number.

② Data code

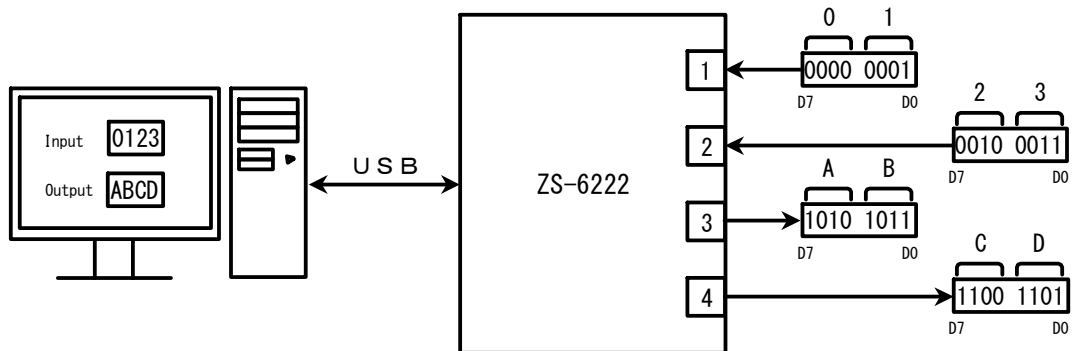
The data transfer method is used ASCII code, and one character is converted to 4-bit parallel code.

4-bit parallel				USB Data
8	4	2	1	HEX
0	0	0	0	0
0	0	0	1	1
0	0	1	0	2
0	0	1	1	3
0	1	0	0	4
0	1	0	1	5
0	1	1	0	6
0	1	1	1	7
1	0	0	0	8
1	0	0	1	9
1	0	1	0	A
1	0	1	1	B
1	1	0	0	C
1	1	0	1	D
1	1	1	0	E
1	1	1	1	F

- ③ The data sent from the PC is transferred sequentially from the small number of the port for output. Port set for input is also sequentially taken from small number and sent to PC. The data of each port is captured 4-bits at a time.

➤ e.g) When ports 1 and 2 are set for input, and ports 3 and 4 are set for output.

Order to send to PC	Port data	Order to output to the ZS-6222	Port data
1	Port_1 D7 to D4	1	Port_3 D7 to D4
2	Port_1 D3 to D0	2	Port_3 D3 to D0
3	Port_2 D7 to D4	3	Port_4 D7 to D4
4	Port_2 D3 to D0	4	Port_4 D3 to D0



5.2. Control signal

A control signal is displayed so that it can be synchronized with the connected device.

Signal	Direction	Description
STB	OUT	ZS-6222 completes receiving all data from the PC and outputs a pulse signal after parallel output. External device can be used this signal for Latch-Clock.
TRG	OUT	A pulse signal is output to an external device by "T" command.
CLR	OUT	A pulse signal is output to an external device by "C" command. It is possible to be used resetting external devices.
LAH	IN	When the latch circuit is enabled setting by "L" command, latch input data with this signal. Input a signal with a pulse width of 500μs or more.

Note) The pulse width of the output can be set by command.

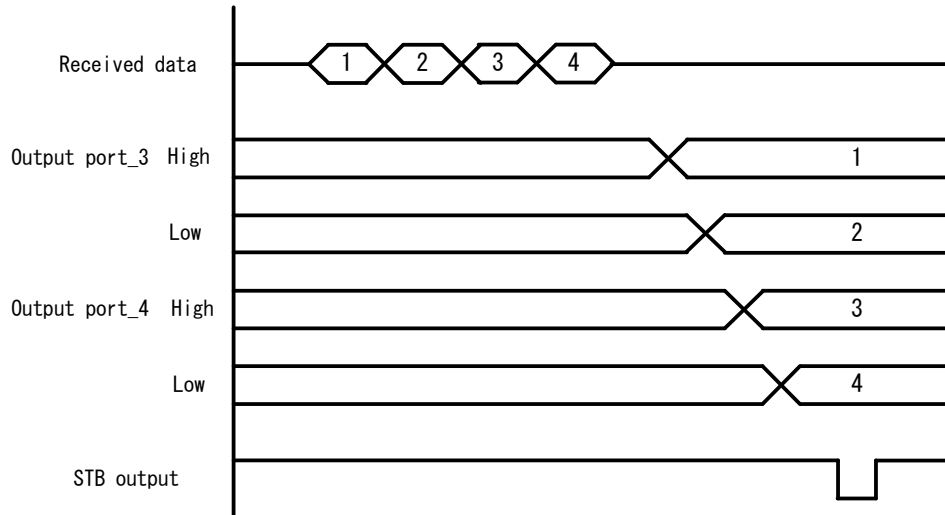
It is possible to be set 10μs, 100μs and 1ms.

5.3. I/O

- ① Output data from PC to parallel port. After receiving the data sent from the PC, set the data 4-bits at a time on the output port. When the data setting is completed, the STB pulse is output.

Note) When the amount of received data which is set to output port is exceeded, extra data will be discarded.

If the received data is less than amount of setting data in an output port, the data sent last time will be remained in the empty space.



- ② The data that is input from parallel port send to the PC.

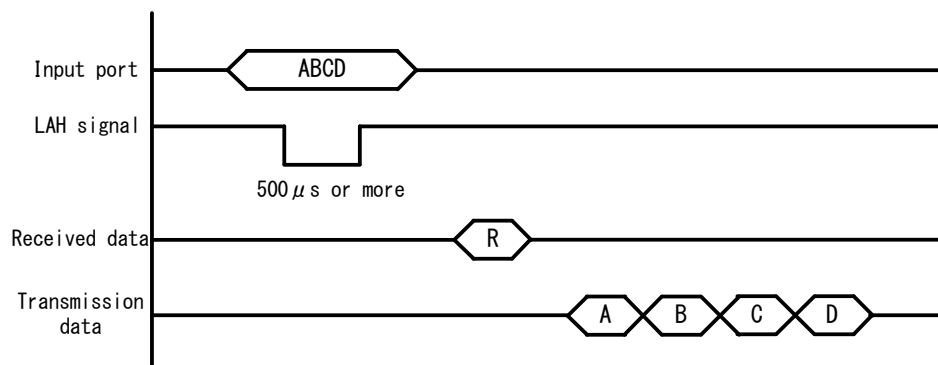
- Without latch

When ZS-6222 receives the “R” command from the PC, it takes in the data from the input port and transmits it to PC.

- With latch

Data from the input port is captured when the LAH input is LOW.

When ZS-6222 receives the “R” command from the PC, it sends the captured data to the PC.



5.4. Command chart

ZS-6222 recognizes the first byte of the data as a control command and control it.

It is necessary to add a delimiter (CR+LF) at the end of the data string and transmit.

If there is a character string other than the command at the beginning of the data, NG will be sent as returned value.

Command	Function
R	Data is read from all ports set as input.
W	Data is written to the port set as output.
T	Pulse is output from the TRG signal.
C	Pulse is output from the CLR signal.
D	Configure port I/O settings.
P	Set the pulse width of the control signal.
L	Set the presence/absence of latch circuit.

5.4.1. R command

➤ Function

Data is read from all ports set as input.

e.g) If input port is set four ports, 8 bytes of data will be sent from ZS-6222 when “R” command is used.

➤ Format

R CR LF

➤ Return value

xxxx····CR LF: Amount of data as same as the number set for the input port will be received.

X is an ASCII code from 0 to F.

NG CR LF: There is no input port.

5.4.2. W command

➤ Function

Write data to the port set as output and it is sent to ZS-6222.

If data is transmitted less than 8 bytes, the data will be newly changed for the transmitted data and the previous data will be remained in empty space. If more than 8 bytes of data are transmitted, it will be discarded.

➤ Format

Wxxxx····CR LF: Write output data to the output port after “W”.

x is an ASCII code from 0 to F.

➤ Return value

OK CR LF: Data output complete to output port.

NG CR LF: No output port, data character error.

5.4.3. T command

- Function
Output the pulse to control signal “TRG”.
- Format
T CR LF
- Return value
OK CR LF: Pulse output is completed.
NG CR LF: Pulse output error.

5.4.4. C command

- Function
Output the pulse to control signal “CLR”.
- Format
C CR LF
- Return value
OK CR LF: Pulse output is completed.
NG CR LF: Pulse output error.

5.4.5. D command

- Function
Set the I/O of the four ports. All four ports are set to input when powering on the ZS-6222.
- Format
Dxxxx CR LF: Make setting in the order of port_1, port_2, port_3, and port_4 after “D”. “x” is writes “I” for input, “O” for output.
- Return value
OK CR LF: Setting is completed.
NG CR LF: Setting error, wrong character setting.

5.4.6. P command

- Function
The pulse width of the control signal “STB”, “TRG”, “CLR” can be set from 10 μ s, 100 μ s, 1ms. It is set to 10 μ s when powering on the ZS-6222.
- Format
Px CR LF: “x” is 0 for 10 μ s, 1 for 100 μ s, 2 for 1ms.
- Return value
OK CR LF: Setting is completed.
NG CR LF: Setting error, wrong character setting.

5.4.7. L command

- Function
It is possible to set the presence or absence of the latch circuit when inputting data.
It is set without latch circuit when powering on the ZS-6222.
- Format
Lx CR LF: “x” is 0 for absence, 1 for presence.

➤ Return value

OK CR LF: Setting is completed.

NG CR LF: Setting error, wrong character setting.

6. Connector

Data connector FAP-5001-1202-0BF

DATA (CN1)

I/O	SIGNAL	PIN		SIGNAL	I/O
PORT ①	D0	1	2	D0	PORT ②
	D1	3	4	D1	
	D2	5	6	D2	
	D3	7	8	D3	
	D4	9	10	D4	
	D5	11	12	D5	
	D6	13	14	D6	
	D7	15	16	D7	
PORT ③	D0	17	18	D0	PORT ④
	D1	19	20	D1	
	D2	21	22	D2	
	D3	23	24	D3	
	D4	25	26	D4	
	D5	27	28	D5	
	D6	29	30	D6	
	D7	31	32	D7	
IN	LAH	33	34	(NC)	
OUT	STB	35	36	(NC)	
OUT	TRG	37	38	(NC)	
OUT	CLR	39	40	(NC)	
	(NC)	41	42	GND	
	(NC)	43	44	GND	
	(NC)	45	46	GND	
	(NC)	47	48	GND	
	(NC)	49	50	GND	

Note) I/O indicates the direction between the signals of the ZS-6222 adapter and the parallel signal input/output device.

IN : ZS-6222 ← External device

OUT : ZS-6222 → External device

PORT : Bidirectional data bus.

It is possible to switch between IN and OUT with PC setting.

7. 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