

ZS-6822A Series
LAN/DIO Adapter

instruction manual

2nd edition



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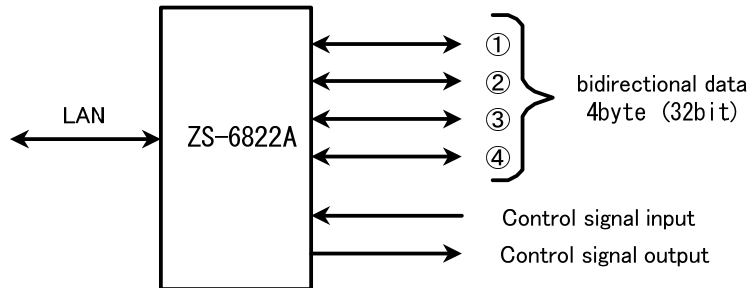
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1. Overview

The ZS-6822A is a unit that communicates digital I/O signals and LAN.

By connecting to a PC or PLC with LAN interface, various measuring instruments with BCD output or the user's own device control and data collection can be performed.



2. Features

- ① Measurement control can be easily performed from a LAN network.
- ② There are 4 ports (8 bits/port) for digital I/O signals, each with input/output selection for each port.
- ③ In addition to data, a control line is provided to synchronize with an external device.

3. Specifications

3.1. Operating environment

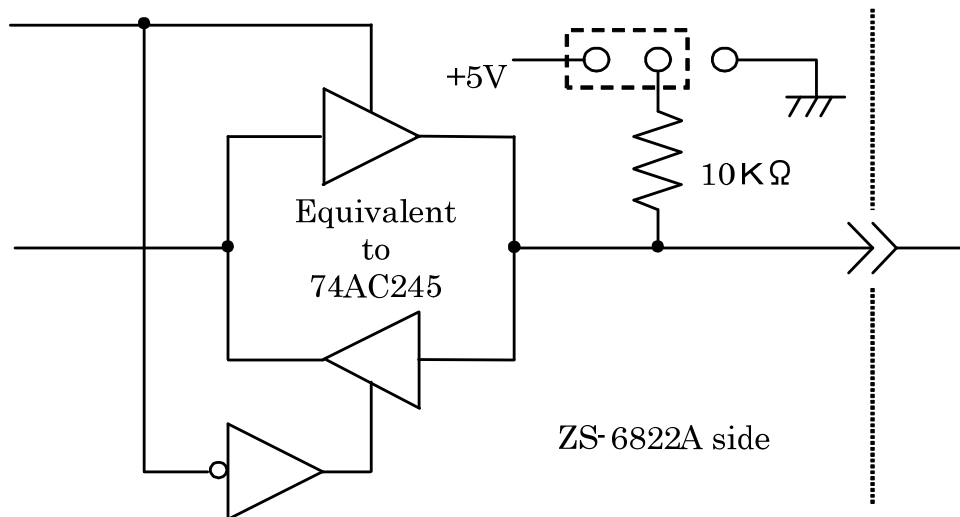
- Equipment with LAN port

3.2. LAN

- Standard : IEEE802.3
- Media type : 10BASE-T or 100BASE-TX (automatic switching)
- Media Access Control : CSMA/CD
- Modulation/Encoding Method : Baseband/Manchester Encoding 4B5B, NRZ
- Transmission speed : 10BASE-T→10Mbps, 100BASE-TX→100Mbps
- Transmission medium : 2-to-4-core UTP category 5 cable
- Impedance : 100Ω
- Connector : RJ45-8 pin modular connector (ISO8877 compliant)
- Maximum segment length : 100m
- Wiring form : Star type
- Supported Protocols : ARP, TCP/IP, UDP/IP, Telnet, ICMP, SNMP, DHCP, BOOTP, TFTP, AutoIP, HTTP

3.3. Digital I/O Port

- Number of ports : 4 ports (8 bits/port)
- Input/output level : Fan-in = 1
Fan-out = 10
Pull-up resistor 10KΩ (factory setting) Can also be set to pull-down



3.4. Product specifications

Model	ZS-6822AP	ZS-6822AS
Features	Printed circuit board, embedded, low price	Small case, low price
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
Usage environment	Temperature 0°C to 50°C Humidity 85% max.	Temperature 0°C to 50°C Humidity 85% max.
Storage temperature	-20°C to 80°C	-20°C to 80°C
External dimensions	74 x 100 x about 20 (H)	80 x 110 x about 30 (H)
Accessories	data connector FAS-5001-2101-0BF (Yamaichi) DC power cable	data connector FAS-5001-2101-0BF (Yamaichi)

3.5. Appearance and dimensional drawing

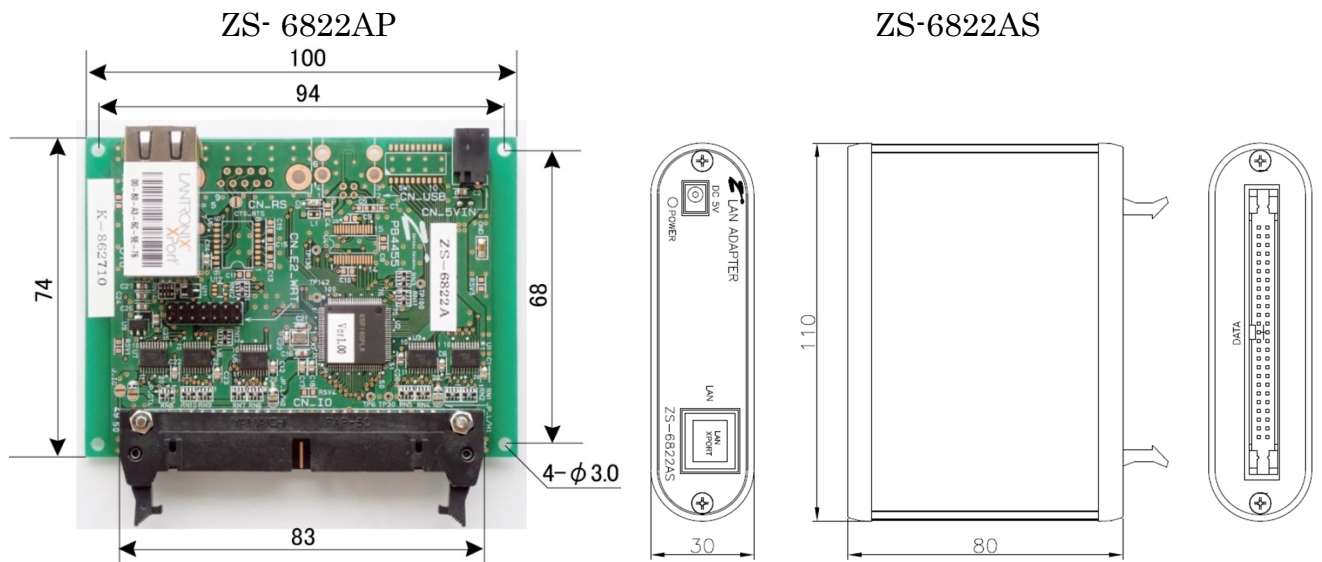
• ZS-6822AP (PC board type)



• ZS-6822AS (small case type)



• Dimensional drawing

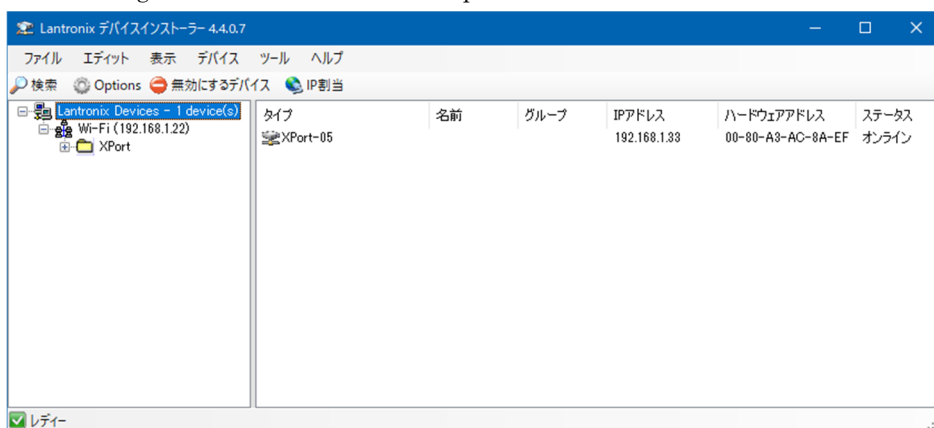


4. Main unit settings

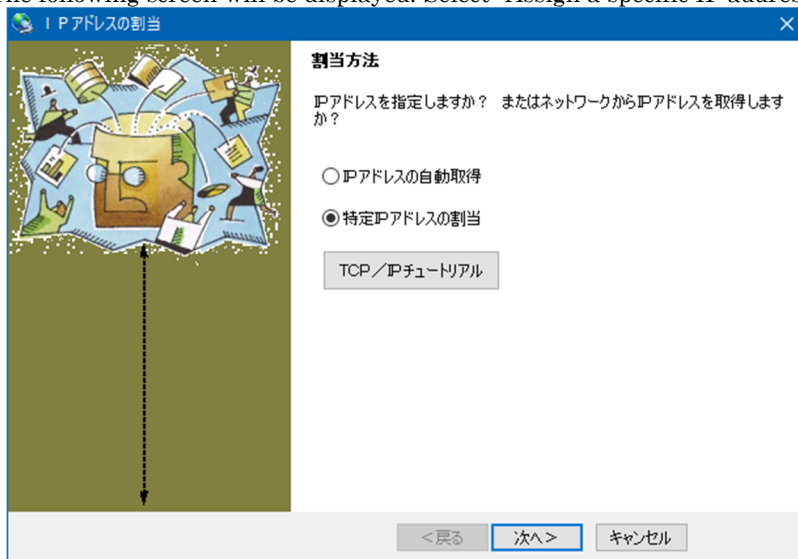
4.1. How to set the IP address using " Device Installer "

- ① Install the DeviceInstaller downloaded from our HP or LANTRONIX HP on your PC.
- ② Please have your ZS-6822A warranty card ready (refer to the MAC address attached to the warranty card).
A sticker with the same contents is attached to the main body.
- ③ Connect the ZS-6822A to the LAN.
- ④ Power on the ZS-6822A .
- ⑤ Start Device Installer . If a warning message is displayed, click OK.
- ⑥ ZS-6822A can be recognized, the following screen will be displayed.
MAC address on the warranty card matches the displayed hardware address. If it cannot be recognized, please check if "192.168.1.33" is already connected to the LAN .
Here is an example of how to change the initial value "192.168.1.33" to "192.168.1.52".

※The following screenshots are from the Japanese version.



- ⑦ "XPort-05" in the right frame to select it, and click "IP Assignment".
The following screen will be displayed. Select "Assign a specific IP address" and click "Next".




- ⑧ Enter the value of the address you wish to set in the "IP Address" section and click "Next".



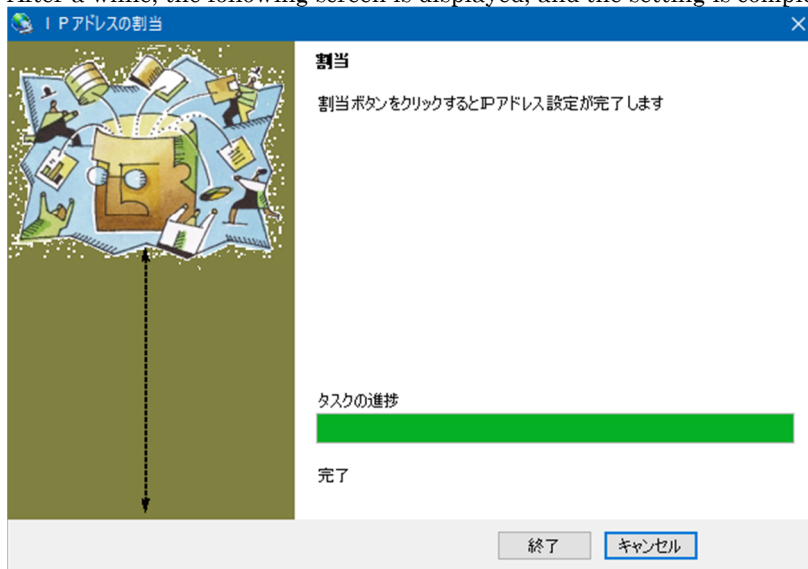
The screenshot shows a window titled "IPアドレスの割当" (IP Address Assignment) with a close button in the top right corner. On the left is a decorative graphic of puzzle pieces. The main area is titled "IP設定" (IP Settings) and contains the following text: "IPアドレス、サブネット、ゲートウェイを入力してください。サブネットは自動入力されますが、正しいかどうかお確かめ下さい。不正な値を入力しますと、デバイス通信が確立しません。またネットワーク障害の原因になりますのでご注意ください。" (Please enter the IP address, subnet, and gateway. The subnet is entered automatically, but please check if it is correct. If you enter an incorrect value, device communication will not be established. It may also cause network failure, so please be careful.) Below the text are three input fields: "IPアドレス" (IP Address) with the value "192.168.1.52", "サブネットマスク" (Subnet Mask) with the value "255.255.255.0", and "デフォルトゲートウェイ" (Default Gateway) with the value "0.0.0.0". At the bottom are three buttons: "<戻る" (Back), "次へ>" (Next), and "キャンセル" (Cancel).

- ⑨ When the following screen appears, click "Assign".



The screenshot shows the same window titled "IPアドレスの割当" (IP Address Assignment). The main area is titled "割当" (Assign) and contains the text: "割当ボタンをクリックするとIPアドレス設定が完了します" (Clicking the Assign button will complete the IP address settings). Below the text is a button labeled "割当" (Assign). At the bottom are three buttons: "<戻る" (Back), "終了" (End), and "キャンセル" (Cancel).

- ⑩ After a while, the following screen is displayed, and the setting is completed. Click Finish.



- ⑪ It will be successful if the IP address has been changed correctly. Quit Device Installer.

5. How to install "COM Port Redirector"

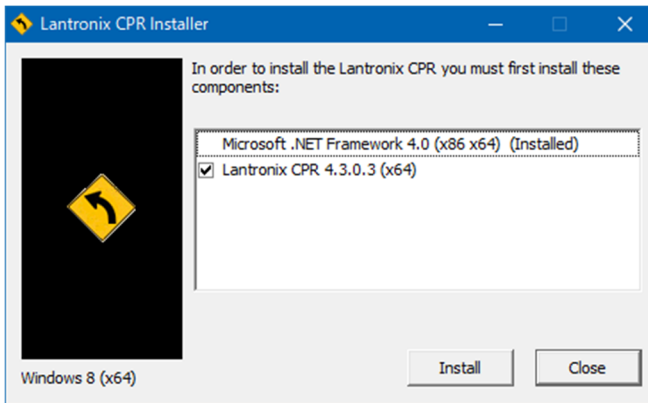
This section describes how to install Lantronix's COM Port Redirector, a user application program for the ZS-6822A that allows the use of virtual COM ports without awareness of TCP/IP or UDP/IP. This is a simplified explanation, please refer to the Lantronix COM Port Redirector page for details.

<https://www.lantronix.com/products/com-port-redirector/>

This chapter is not necessary when writing user application programs in TCP/IP or UDP/IP.

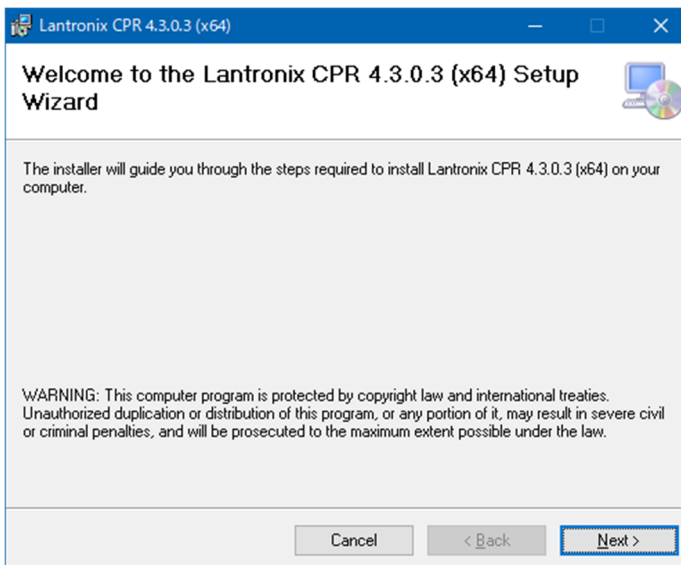
5.1. Installation of "COM Port Redirector"

- ① Downloaded from our HP or Lantronix HP
" setup_cpr_x86x64cd_4.3.0.3.exe " and the following screen will be displayed.
(The file name and display contents differ depending on the software version and Windows)

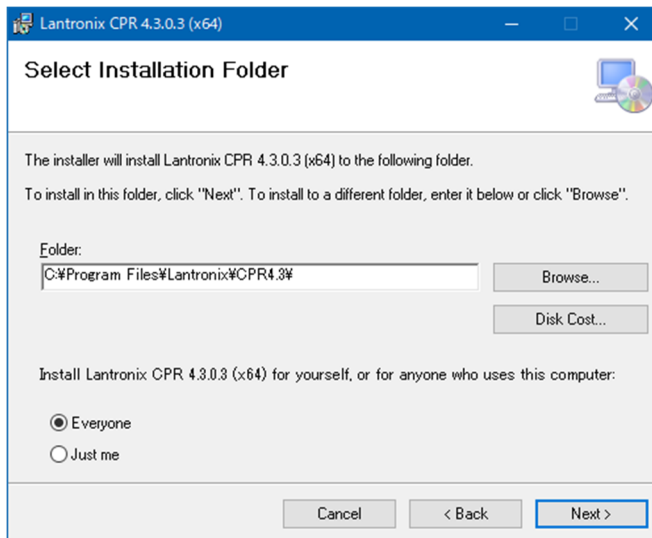


"NET Framework 4.0" is not installed, click the "Install" button with the check box checked.
"NET Framework 4.0" will be installed on the way.

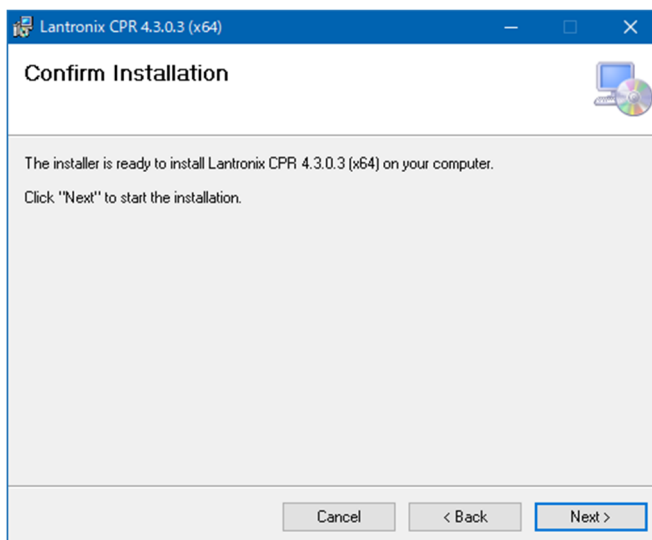
- ② Click the "Next" button.



- ③ Set the installation destination and click the "Next" button.
Unless otherwise specified, the installation destination can be left as is.



- ④ Click the "Next" button. Installation will start.

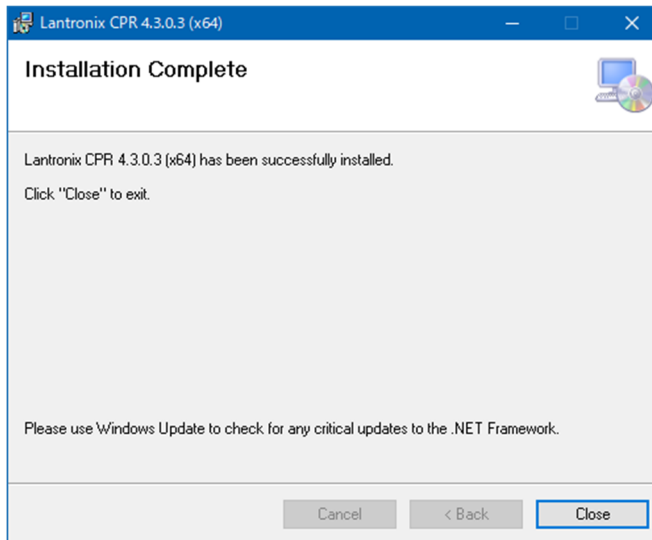


Installation will start.

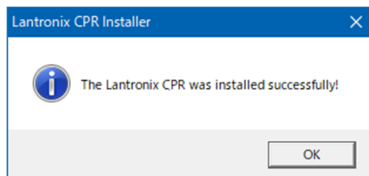
- ⑤ If the following screen appears on the way, click "Install".



⑥ "Close" button.

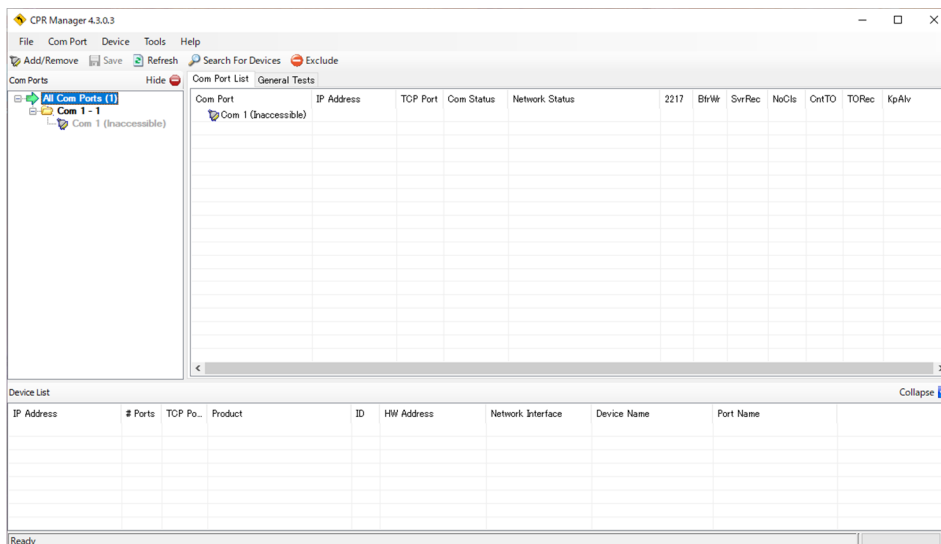


⑦ Click the "OK" button. Installation is now complete.



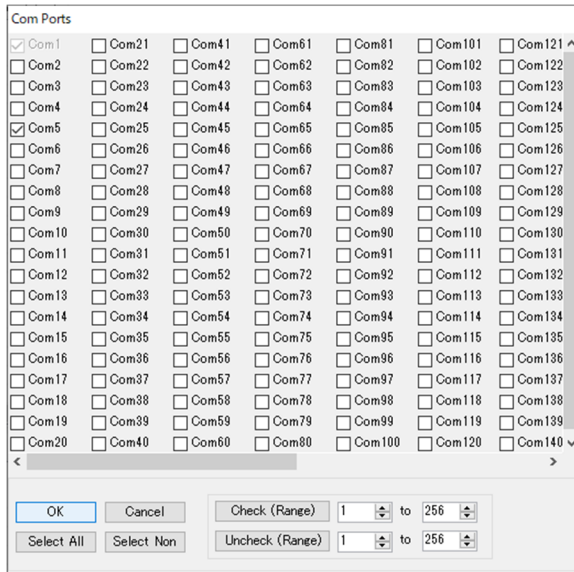
5.2. Virtual COM port setting

① From the start menu, select "Lantronix" → "CPR Manager" to start it. A screen like the one below will appear.



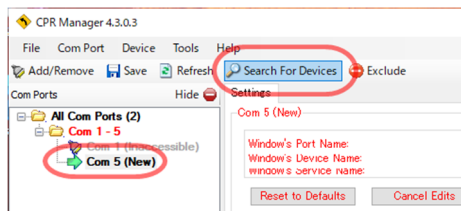
② on the upper left of the screen to display the following screen.

Check the port number to be set as the virtual COM port on this screen and press the "OK" button.



*This is an example where Com5 is checked.

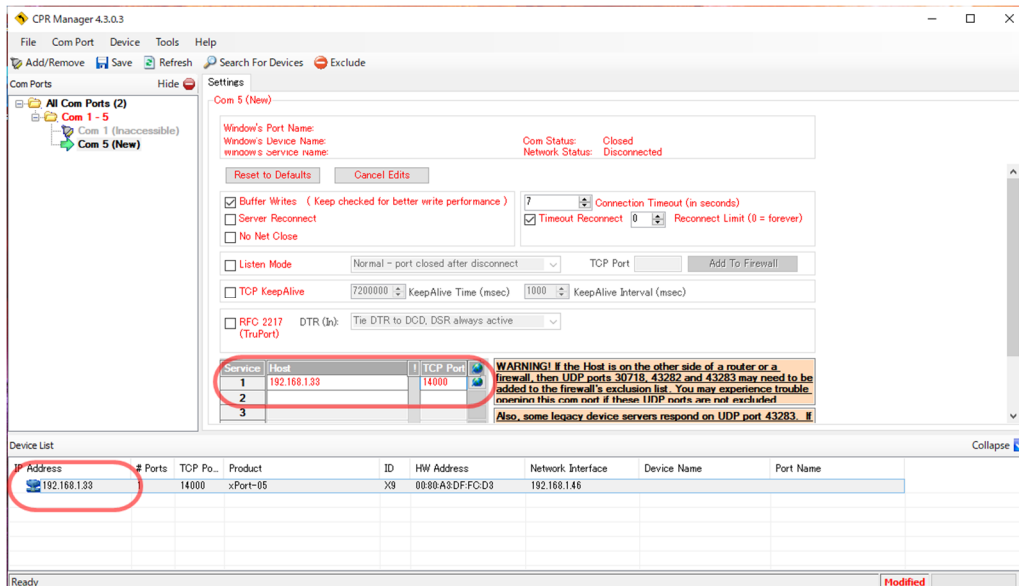
③ "Com X (New)" will be added in "Com Ports " on the left side of the screen , so select it and click " Search For Devices " .



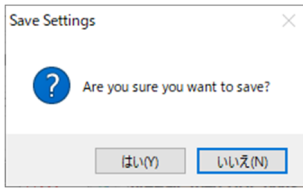
④ the search is complete , double-click the item displayed in the " Device List " at the bottom of the screen.

The IP address and TCP port settings are automatically reflected on the right side of the screen.

*If you cannot find it even after repeating the search, set the IP address of ZS-6822A for "Host". Set 14000 for "TCP Port".



- ⑤ After completing the settings, select “Com Port” → “Save Setting”.
The following screen will be displayed, so select "Yes".



- ⑥ The settings are now complete. Close and exit the application.

6. Operation

6.1. Transfer data method

① Data code assignment table

ASCII code is used for data transfer, and one character is converted to 4-bit binary code.

4-bit binary				LAN 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

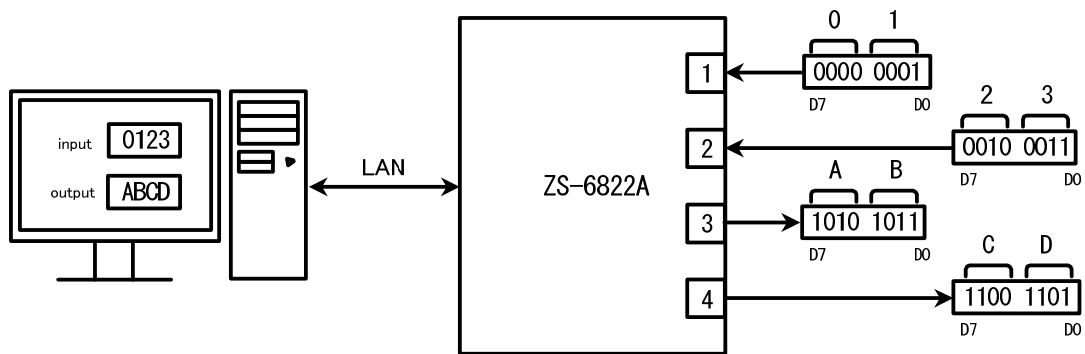
- ② Data sent from a personal computer is transferred sequentially from the smallest port number set for output.

The port set for input also takes data sequentially from the smallest number and sends it to the personal computer.

Data for each port is set or read in 4-bit increments.

- Example: When ports 1 and 2 are set to input and ports 3 and 4 are set to output

Send to PC order to do	port data	Order of output to ZS-6822A ports	port data
1	D7 to D4 of port 1	1	D7 to D4 of port 3
2	D3 to D0 of port 1	2	D3 to D0 of port 3
3	D7 to D4 of port 2	3	D7 to D4 of port 4
4	D3 to D0 of port 2	4	D3 to D0 of port 4



6.2. Control Signals

A control signal is provided to synchronize with the connected device.

Signal name	signal direction	explanation
STB	OUT	The adapter completes receiving all data from the PC and outputs a pulse signal after output to the port. External devices can use this signal for Latch-Clock or other purposes as needed.
TRG	OUT	Pulse signals are output to external devices by the "T" command.
CLR	OUT	Pulse signals are output to external devices by the "C" command. This can be used to reset external devices.
LAH	IN	When the latch circuit is enabled (set by "L" command), input data is latched with this signal. Input a signal with a pulse width of 500us or more.

Note) Output pulse width can be set by command.

The pulse widths that can be set are 10μs, 100μs, 1ms, 10ms, and 100ms.

6.3. Input/output operation

① Output data from PC to port

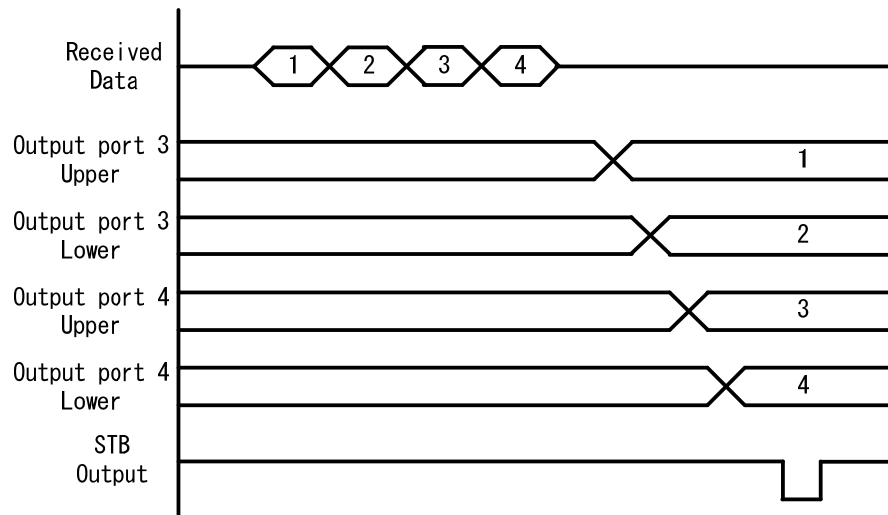
➤ continuous output

After receiving the data from the PC, send the data to the port set for output.

Set data in 4-bit units (in the order of high order and low order).

After setting the data to the output port, the STB pulse is output.

Note) If more data than the output port setting is sent, the extra data will be discarded.
If less data than the output port setting is sent, the previously sent data will remain in the missing area.



➤ pulse output

After receiving the data from the PC, send the data to the port set for output.

Set data in 4-bit units (in the order of high order and low order).

Output port data is output only for the specified pulse width.

② Send data input from port to PC

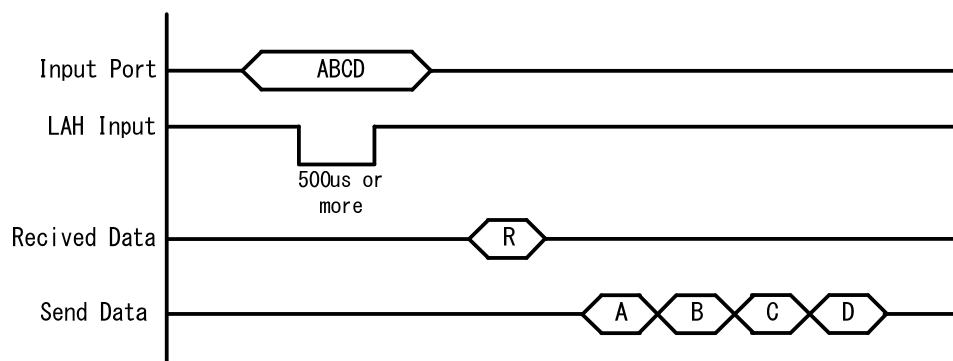
➤ No latch

When the ZS-6822A receives an "R" command from the PC, it takes data from the input port at that time (in the order of upper and lower) and sends it to the PC.

➤ with latch

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

When the ZS-6822A receives the "R" command from the PC, it sends the data to the PC when it is captured as described above.



6.4. Command list

The ZS-6822A recognizes the first byte of data as a control command and controls it. Also, be sure to add a delimiter (CR+LF) at the end of the data string before sending. If there is a character string other than the command at the beginning of the data, NG will be sent as the return value.

The commands are as follows.

command	function
R	Reads data from all ports set as inputs
W	Writes data to a port set to output
T	Output pulse from TRG signal
C	Output pulse from CLR signal
D	Configure port input/output settings
P	Sets the pulse width of the control signal
L	Sets the presence or absence of the latch circuit
U	Set the output signal
B	Sets the positive/negative logic of the port
I	Reads data from all ports regardless of input/output settings

※ The I command was added in Ver. 2.00.

6.4.1. R command

- function
Data is read from all ports that are set as inputs. For example, if 4 input ports are set, the "R" command will send 8 bytes of data from the ZS-6822A.
- format
R CR LF
- return value
xxxx···CR LF : The number of data set in the input port is sent.
x is an ASCII code from 0 to F
NG CR LF : No input port

6.4.2. W command

- function
Data is written to the ports set for output.
For example, if 4 output ports are set, the "W" command is followed by 8 bytes of data to be sent to the ZS-6822A.
If less than 8 bytes of data is sent, the amount of data sent will be newly changed, and the previous data will be retained in the missing parts.
- format
Wxxxx···CR LF : Write the data to be output to the output port after "W"
x is an ASCII code from 0 to F
- return value
OK CR LF : Completion of data output to the output port
NG CR LF : No output port, wrong data character error

6.4.3. T command

- function
Output a pulse to the control signal "TRG"
- format
T CR LF
- return value
OK CR LF : Pulse output complete
NG CR LF : Pulse output error

6.4.4. C command

- function
Output a pulse to the control signal "CLR"
- format
C CR LF
- return value
OK CR LF : Pulse output complete
NG CR LF : Pulse output error

6.4.5. D command

- function
Input/output settings for the four ports.
When the ZS-6822A is powered on, all are set to input.
- format
Dxxxx CR LF : After "D", set port ①, port ②, port ③, and port ④ in this order.
x writes "I" for IN for input and "O" for OUT for output.
- return value
OK CR LF : Setting complete
NG CR LF : Input/output setting error, setting character error

6.4.6. P command

- function
The pulse widths of the control signals "STB," "TRG," and "CLR" and the pulse width at data output can be set from one of five types: 10 μ s, 100 μ s, 1ms, 10ms, and 100ms.
When the ZS-6822A is powered on, it is set to 10 μ s.
- format
Px CR LF : x is a number. The number assignment is as follows.
0...10 μ s, 1...100 μ s, 2...1 ms
3...10ms, 4...100ms
- return value
OK CR LF : Setting complete
NG CR LF : Setting error, wrong setting error

6.4.7. L command

- function
 - It can be set with or without latch circuit at the time of data input.
 - When the ZS-6822A is powered on, it is set to no latch circuit.
- format
 - Lx CR LF : x is a number, "0" if no, "1" if yes.
- return value
 - OK CR LF : Setting complete
 - NG CR LF : Setting error, wrong setting error

6.4.8. U command

- function
 - This is used to set the signal setting for data output.
 - When the ZS-6822A is turned on, it is set to continuous output.
 - The pulse width at the time of pulse output is set by the P command.
- format
 - Ux CR LF : x is a number, "0" for continuous output and "1" for pulse output.
- return value
 - OK CR LF : Setting complete
 - NG CR LF : Setting error, wrong setting error

6.4.9. B command

- function
 - Positive and negative logic settings for the four ports.
 - When the ZS-6822A is powered on, all are set to positive logic.
 - This command should be performed when the ports are set to input.
- format
 - Bx CR LF : x is a number, "0" for positive logic and "1" for negative logic.
- return value
 - OK CR LF : Setting complete
 - NG CR LF : Setting error, wrong setting error

6.4.10. I Command

- function
 - Data is read from all ports regardless of input/output settings.
 - Data is read from ports that are set to output, regardless of the input/output settings.
 - When the "I" command is issued, 8 bytes of data are sent from the ZS-6822A.
- format
 - I CR LF
- return value
 - xxxxxxxxCR LF : Data (8 bytes) for all 4 ports is sent.
x is an ASCII code from 0 to F

7. Connector table

Data connector (used connector FAP-5001-1202-0BF (Yamaichi))

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	+5V	
OUT	STB	35	36	+5V	
OUT	TRG	37	38	+5V	
OUT	CLR	39	40	+5V	
	(NC)	41	42	GND	
	(NC)	43	44	GND	
	(NC)	45	46	GND	
	(NC)	47	48	GND	
	(NC)	49	50	GND	

Note) PIN 34, 36, 38, and 40 are (NC) in the former model ZS-6822 and +5V in the ZS-6822A.

Note) I/O indicates the direction between signals between the ZS-6822A adapter and the digital I/O signal input/output device.

IN : ZS-6822A ← External device

OUT : ZS-6822A → external device

PORT : Bi-directional data bus.

You can switch IN/OUT by D command setting

8. Warranty

- ① Although Minebea's products are delivered under strict quality control and inspection, in the unlikely event of a malfunction, we will repair the product free of charge only under the following conditions.
 - If the product malfunctions during the warranty period (one year from the date of purchase) under normal conditions of use in accordance with the instruction manual and other notes.
- ② In the following cases, the product will be repaired for a fee even during the warranty period.
 - Malfunction or damage caused by improper use or carelessness
 - Malfunction or damage caused by improper repair or modification
 - Malfunction or damage caused by fire, earthquake, other natural disasters, earthquakes, or external factors such as abnormal voltage damage
 - Replacement of consumable parts
 - Change of power supply or voltage