

ZS-6130B Series

RS-232C - PIO Adapter

User's Manual



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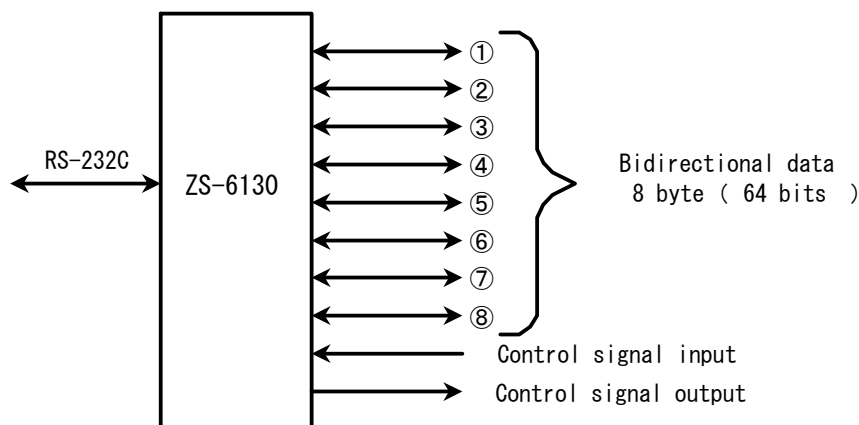
URL <http://www.zenisu.co.jp/>

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1.Outline

ZS-6130B is a unit that communicates parallel signal and RS-232C. It is possible to be connected to PC with RS-232C interface, and equipment control and data collection of BCD output measuring the equipment can be done.



2.Feature

- (1) It is possible to be easily measurement controlled with laptop computer.
- (2) There are 4 ports(8 bits/port) for parallel signals, and I/O can be selected for each port.
- (3) Data code is possible to be selected in units of 4 bits with BCD or HEX.
- (4) In addition to data, control lines are prepared so that it can be synchronized with external device.
- (5) It is possible to be selected positive/negative logic for I/O data and control line.

3.Specification

3.1.RS-232C

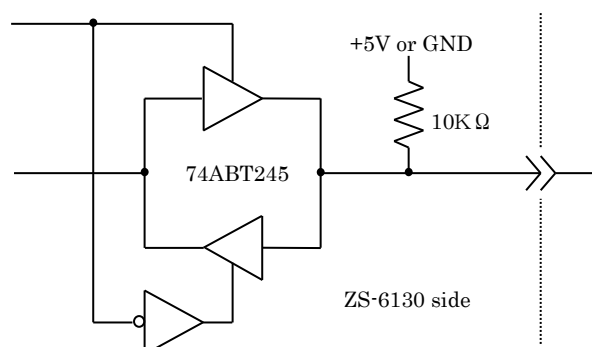
- (1) Communication method: Full duplex communication method
- (2) Synchronized method: Asynchronous method
- (3) Communication speed: 2,400, 4,800, 9,600, 19,200, 38,400, 57,600
115,200, 230,400bps
- (4) Handshake: Hardware method
- (5) Character bit length: 7, 8
- (6) Parity: None, Odd, Even
- (7) Stop bit length: 1, 2
- (8) DTE/DCE: DTE specification
- (9) Logic: ON(space) +3V to +12V
OFF(mark) -3V to -12V

3.2.Parallel port

Port: 8 ports (8bits/port)

I/O level: Fan-in=1, Fan-out=10

Pull up resistor 10KΩ, it is possible to be pull-down.

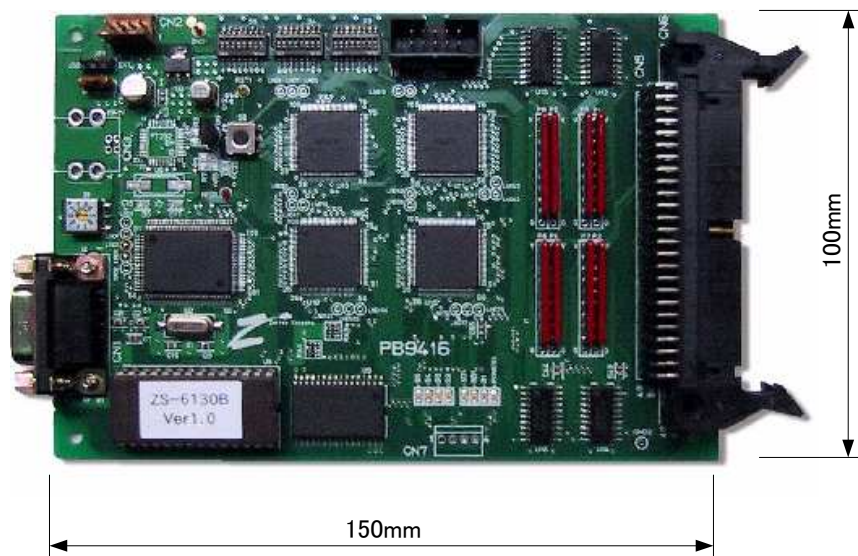


3.3.Product specification

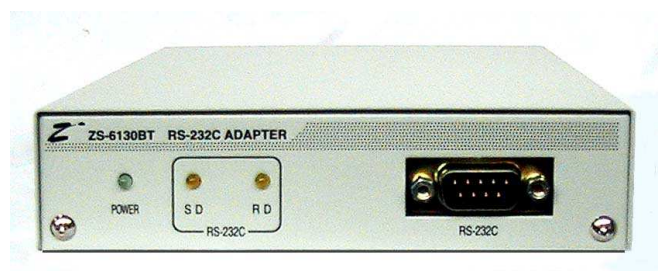
Model	ZS-6130BP	ZS-6130BT	ZS-6130BH
Feature	Printed circuit boarded type	Small case built-in type	Small case built-in type
Data connector	50-core flat cable	50-core flat cable	57-40500
Power supply	DC4.75V to 5.25V 400mA	DC4.75V to 5.25V	AC85V to 250V 50Hz/60Hz
Environment	Temp 0°C to 50°C Humidity 85% or less	←	←
Storage Temp	-20°C to 80°C	-20°C to 80°C	-20°C to 80°C
Size	150 × 100 × 30H	130(W) × 40(H) × 200	215(W) × 59(H) × 252
Accessory	DC cable Data connector x 2 HIF3BB-50D-2.54R User's manual	AC adapter (option) ← User's manual	AC power cable Data connector x 2 個 57-30500 User's manual

3.4.Appearance

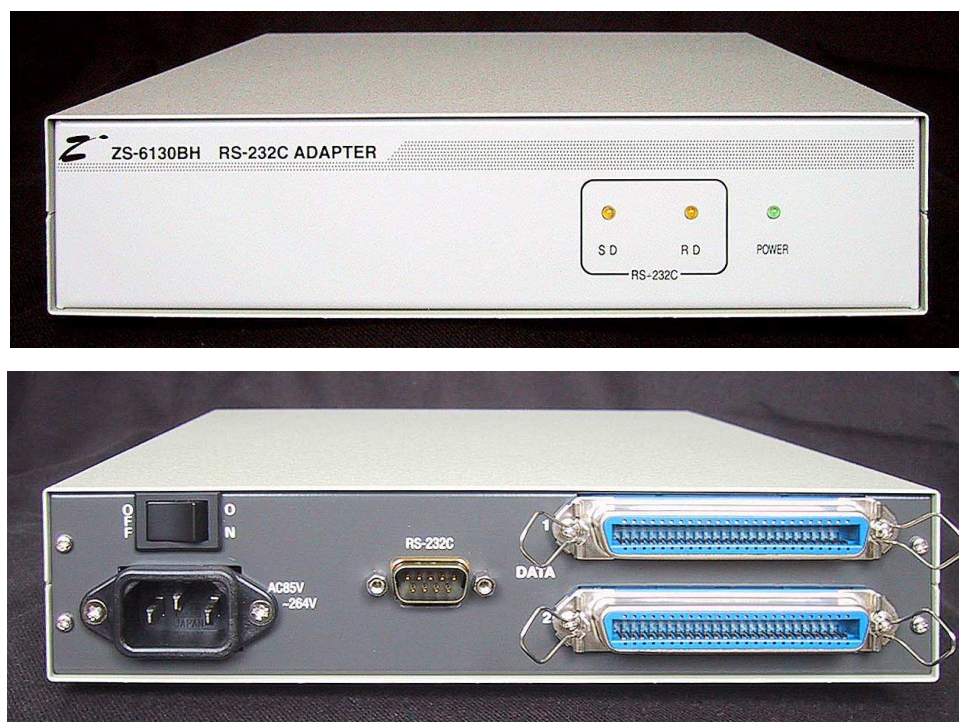
(1) ZS-6130BP



(2) ZS-6130BT



(3) ZS-6130BH



4.RS-232C interface

4.1.RS-232C signal

Signal	Connector PIN NO	Function
TXD	3	Transmission data from ZS-6130B.
RXD	2	Received data from ZS-6130B.
CTS	8	It is an input signal to receive permission of data transmission. Transmission data can be controlled by this signal.
RTS	7	It is an output signal indicating whether or not data I/O is possible.
GND	5	All signals become the reference voltage(0V).

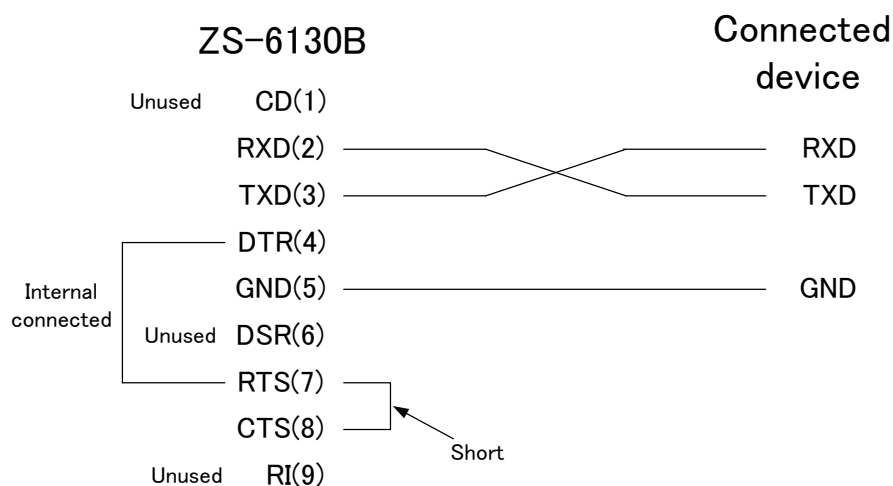
Connector: RDED-9P-LNA(4-40) or equivalent

4.2.RS-232C cable

The following products can be used for the ZS-6130B cable.

- Dsub-9p female - Dsub-9p female
KRS-403XF or equivalent
- Dsub-9p female - Dsub-25p male
KRS-423XF or equivalent

When communicating with only TXD, RXD, please wire as follows.



5.Switch•LED

5.1.LED

(1) Operation LED

	Function
SD1	Transfer data to RS-232C
RD2	Receive data from RS-232C
POWER1	Power is ON

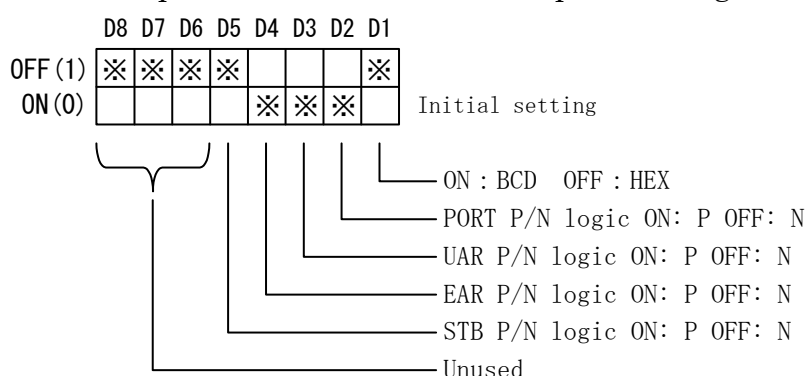
(2) Communication error LED

It is mounted on the printed circuit board of ZS-6130BP, please remove the top cover in the case built-in type.

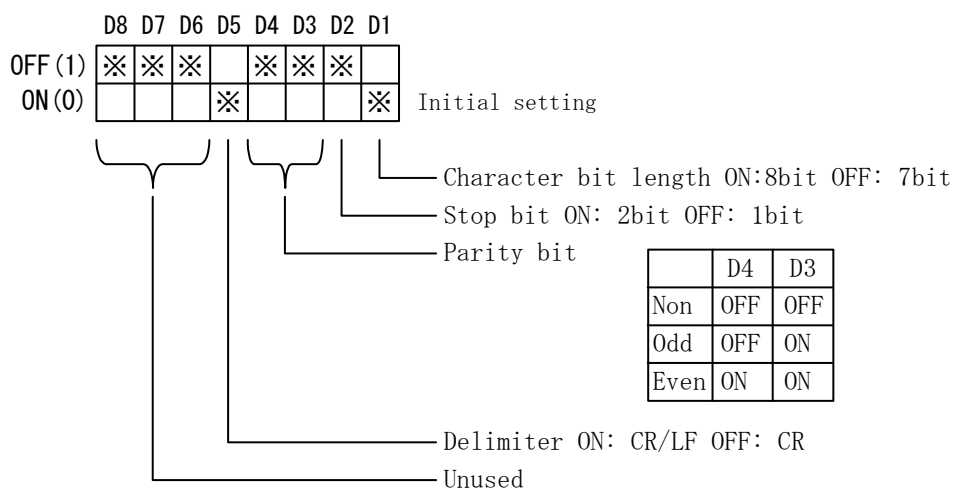
LED	Error	Description
D3	Parity error	Parity or baud rate does not match with connected device.
D4	Over run error	Since the next data was sent before the received data was processed by ZS-6130B, the handshake was not performed normally.
D5	Framing error	There is no stop bit in the received data.

5.2.Switch

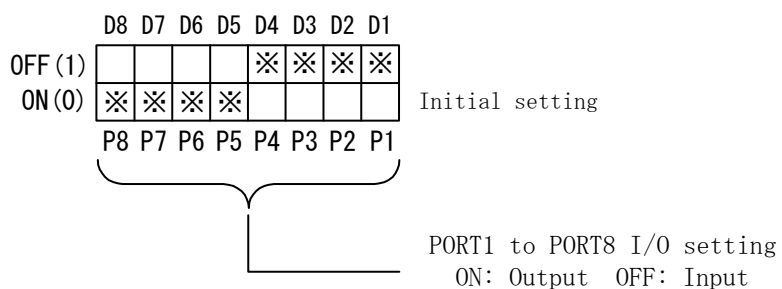
(1) S3···It is possible to be set code and positive/negative logic of data.



(2) S4···RS-232C Protocol



(3) S5...It is possible to be selected data input or output.



Rotary SW...Baud rate setting

SW No.	Baud rate
0	2400 bps
1	4800 bps
2	9600 bps
3	19200 bps
4	38400 bps
5	57600 bps
6	115200 bps
7	230400 bps
8	Unused
9	Unused

(Initial setting: 2)

6.Operation

6.1.Transmission data method

(1) Data code

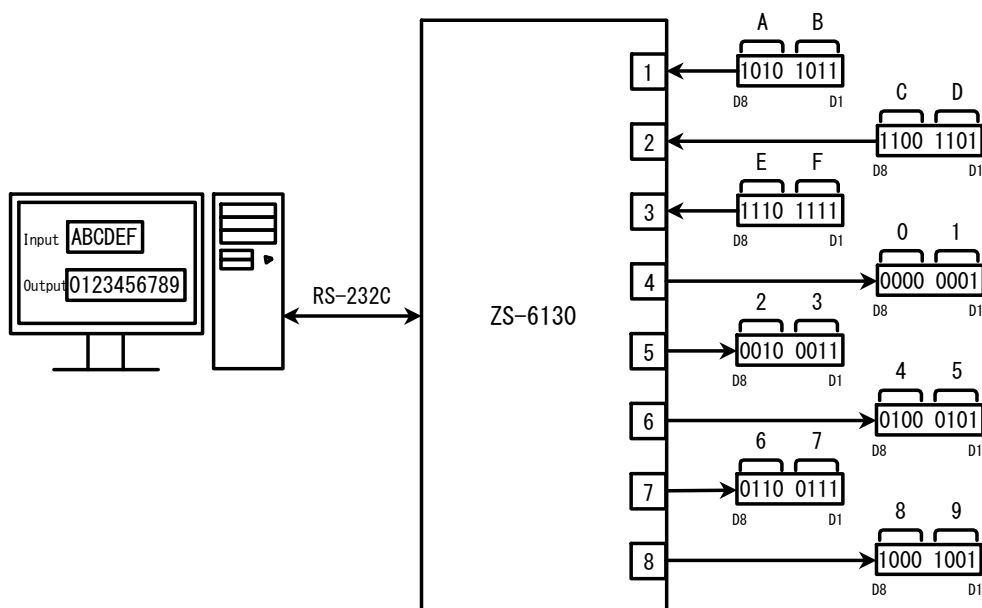
The data transfer is executed by ASCII code, one character is converted to 4-bit parallel code.

4-bit parallel				RS-232C Data	
8	4	2	1	HEX	BCD
0	0	0	0	0	0
0	0	0	1	1	1
0	0	1	0	2	2
0	0	1	1	3	3
0	1	0	0	4	4
0	1	0	1	5	5
0	1	1	0	6	6
0	1	1	1	7	7
1	0	0	0	8	8
1	0	0	1	9	9
1	0	1	0	A	*
1	0	1	1	B	/
1	1	0	0	C	.
1	1	0	1	D	E
1	1	1	0	E	-
1	1	1	1	F	+

- (2) The data sent from the PC is transferred sequentially from smaller numbers of the port set for output. Port numbers set for input are sequentially taken from smaller numbers and sent to PC. The data of each port is set or taken in 4 bits.

Order to send to PC	Port data
1	Port_1 D8 to D5
2	Port_1 D4 to D1
3	Port_2 D8 to D5
4	Port_2 D4 to D1
5	Port_3 D8 to D5
6	Port_3 D4 to D1

Order to send to ZS-6130B	Port data
1	Port_4 D8 to D5
2	Port_4 D4 to D1
3	Port_5 D8 to D5
4	Port_5 D4 to D1
5	Port_6 D8 to D5
6	Port_6 D4 to D1
7	Port_7 D8 to D5
8	Port_7 D4 to D1
9	Port_8 D8 to D5
10	Port_8 D4 to D1



6.2. Control signal

A control signal is prepared so that it can be synchronized with the connected equipment.

	Signal		Description
	I/O	Type	
UAR	OUT	L	It indicates that the adapter is possible to receive the start pulse.
EAR	IN	L	It indicates that external device is possible to receive data.
STB	OUT	P	The adapter completes reception of all data from PC and outputs a pulse signal after outputting to the port. External devices can use this signal for Latch-Clock etc. as necessary. Output a signal with pulse width of 100μs.
STT	IN	P	Data ready signal from external device such as end of measurement. Output a signal with pulse width 30μs.
TRG	OUT	P	Output 100μs pulse signal to external device by trigger function. Output a pulse signal.
CLR	OUT	P	Output 100μs clear signal by clear function. It is possible to be used for resetting external device.

Note) Type L: Level signal, P: Pulse signal

Note) It is possible to be set positive/negative logic for UAR, EAR, STB by using DIP switch.

6.3. Control command

When the following character code is received from the RS232C side, ZS-6130B executes it as a control command.

Command	Description
S	Start reading the parallel port
G	Output TRG pulse signal
L	Output CLR pulse signal

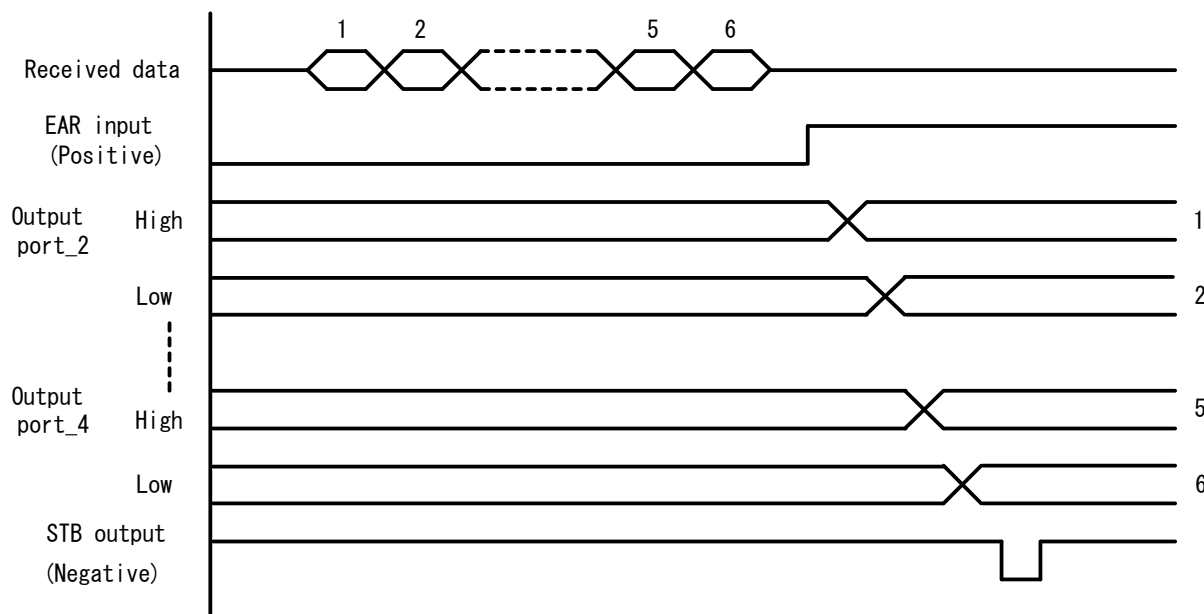
6.4.I/O operation

(1) Output the data from PC to parallel port.

After receiving the data sent from the PC, wait for the EAR input to become active. If it is active, data is set in 4 bits to the port set as output. STB pulse is output after setting the data to the output port.

When more than amount of data that is set for output port is sent, extra data will be discarded. When less than amount of data that is set for output, the data that was sent last time remains in the empty space.

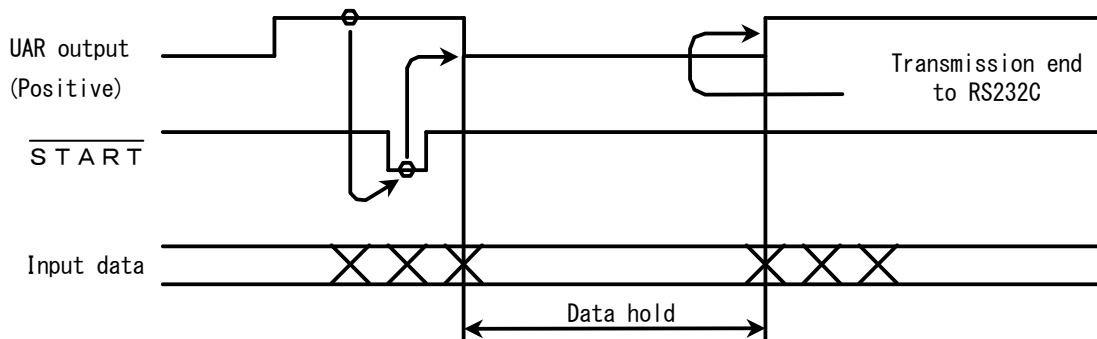
Be sure to set positive/negative logic of EAR to positive logic when not using EAR signal.



(2) Send data from parallel port to PC.

- Synchronized input.

It activates the UAR output and wait for the START pulse. It takes the data from the input port by 4 bits when the start pulse is input, and send it to the PC.



- Asynchronous input

When the "S" command is received from the RS232C interface device, data is loaded from the input port and sent it to the PC.

7.Connector

7.1 ZS-6130BP、ZS-6130BT

Data connector CN5: HIF3BB-50PA2.54WB

CN6: HIF3BB-50PA2.54DS

DATA1 (Connector CN5)

I/O	SIGNAL	PIN		SIGNAL	I/O
PORT ①	D1	1	2	D1	PORT ②
	D2	3	4	D2	
	D3	5	6	D3	
	D4	7	8	D4	
	D5	9	10	D5	
	D6	11	12	D6	
	D7	13	14	D7	
	D8	15	16	D8	
PORT ③	D1	17	18	D1	PORT ④
	D2	19	20	D2	
	D3	21	22	D3	
	D4	23	24	D4	
	D5	25	26	D5	
	D6	27	28	D6	
	D7	29	30	D7	
	D8	31	32	D8	
	(NC)	33	34	+5V	OUT
	(NC)	35	36	+5V	OUT
OUT	UAR	37	38	+5V	OUT
IN	EAR	39	40	+5V	OUT
OUT	STB	41	42	GND	
IN	STT	43	44	GND	
OUT	TRG	45	46	GND	
OUT	CLR	47	48	GND	
	(NC)	49	50	GND	

DATA2 (Connector CN6)

I/O	SIGNAL	PIN		SIGNAL	I/O
PORT ⑤	D1	1	2	D1	PORT ⑥
	D2	3	4	D2	
	D3	5	6	D3	
	D4	7	8	D4	
	D5	9	10	D5	
	D6	11	12	D6	
	D7	13	14	D7	
	D8	15	16	D8	
PORT ⑦	D1	17	18	D1	PORT ⑧
	D2	19	20	D2	
	D3	21	22	D3	
	D4	23	24	D4	
	D5	25	26	D5	
	D6	27	28	D6	
	D7	29	30	D7	
	D8	31	32	D8	
	(NC)	33	34	+5V	OUT
	(NC)	35	36	+5V	OUT
OUT	UAR	37	38	+5V	OUT
IN	EAR	39	40	+5V	OUT
OUT	STB	41	42	GND	
IN	STT	43	44	GND	
OUT	TRG	45	46	GND	
OUT	CLR	47	48	GND	
	(NC)	49	50	GND	

Note) I/O indicates the direction between signals of ZS-6130B and parallel signal input/output device.

IN : ZS-6130B ← External device

OUT : ZS-6130B → External device

PORT : Bidirectional data bus. It is possible to be switched IN/OUT by setting of PC.

Power connector CN1: IL-4P-S3EN2-1

PIN	SIGNAL
1	+5V switching power supply
2	+5V external power supply
3	+5V power supply for RS-232C
4	GND

7.2 ZS-6130BH

Data connector: 57-40500

DATA1

I/O	SIGNAL	PIN		SIGNAL	I/O
PORT ①	D1	1	26	D1	PORT ②
	D2	2	27	D2	
	D3	3	28	D3	
	D4	4	29	D4	
	D5	5	30	D5	
	D6	6	31	D6	
	D7	7	32	D7	
	D8	8	33	D8	
PORT ③	D1	9	34	D1	PORT ④
	D2	10	35	D2	
	D3	11	36	D3	
	D4	12	37	D4	
	D5	13	38	D5	
	D6	14	39	D6	
	D7	15	40	D7	
	D8	16	41	D8	
	(NC)	17	42	+5V	OUT
	(NC)	18	43	+5V	OUT
OUT	UAR	19	44	+5V	OUT
IN	EAR	20	45	+5V	OUT
OUT	STB	21	46	GND	
IN	STT	22	47	GND	
OUT	TRG	23	48	GND	
OUT	CLR	24	49	GND	
	(NC)	25	50	GND	

DATA2

I/O	SIGNAL	PIN		SIGNAL	I/O
PORT ⑤	D1	1	26	D1	PORT ⑥
	D2	2	27	D2	
	D3	3	28	D3	
	D4	4	29	D4	
	D5	5	30	D5	
	D6	6	31	D6	
	D7	7	32	D7	
	D8	8	33	D8	
PORT ⑦	D1	9	34	D1	PORT ⑧
	D2	10	35	D2	
	D3	11	36	D3	
	D4	12	37	D4	
	D5	13	38	D5	
	D6	14	39	D6	
	D7	15	40	D7	
	D8	16	41	D8	
	(NC)	17	42	+5V	OUT
	(NC)	18	43	+5V	OUT
OUT	UAR	19	44	+5V	OUT
IN	EAR	20	45	+5V	OUT
OUT	STB	21	46	GND	
IN	STT	22	47	GND	
OUT	TRG	23	48	GND	
OUT	CLR	24	49	GND	
	(NC)	25	50	GND	

Note) I/O indicates the direction between signals of ZS-6130B and parallel signal input/output device.

IN : ZS-6130B ← External device

OUT : ZS-6130B → External device

PORT : Bidirectional data bus. It is possible to be switched IN/OUT by setting of PC.

8.Option

The following expansion boards are available as options for ZS-6130B.

ZS-7220P: 32-bit isolator input board.

ZS-7221P: 32-bit isolator output board.

ZS-7211P: 24-point relay output board.

9.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